November 20, 1950

STEEL

The Magazine of Metalworking and Metalproducing

CONTENTS — PAGE 61

Your best bet... for BETTER METHODS

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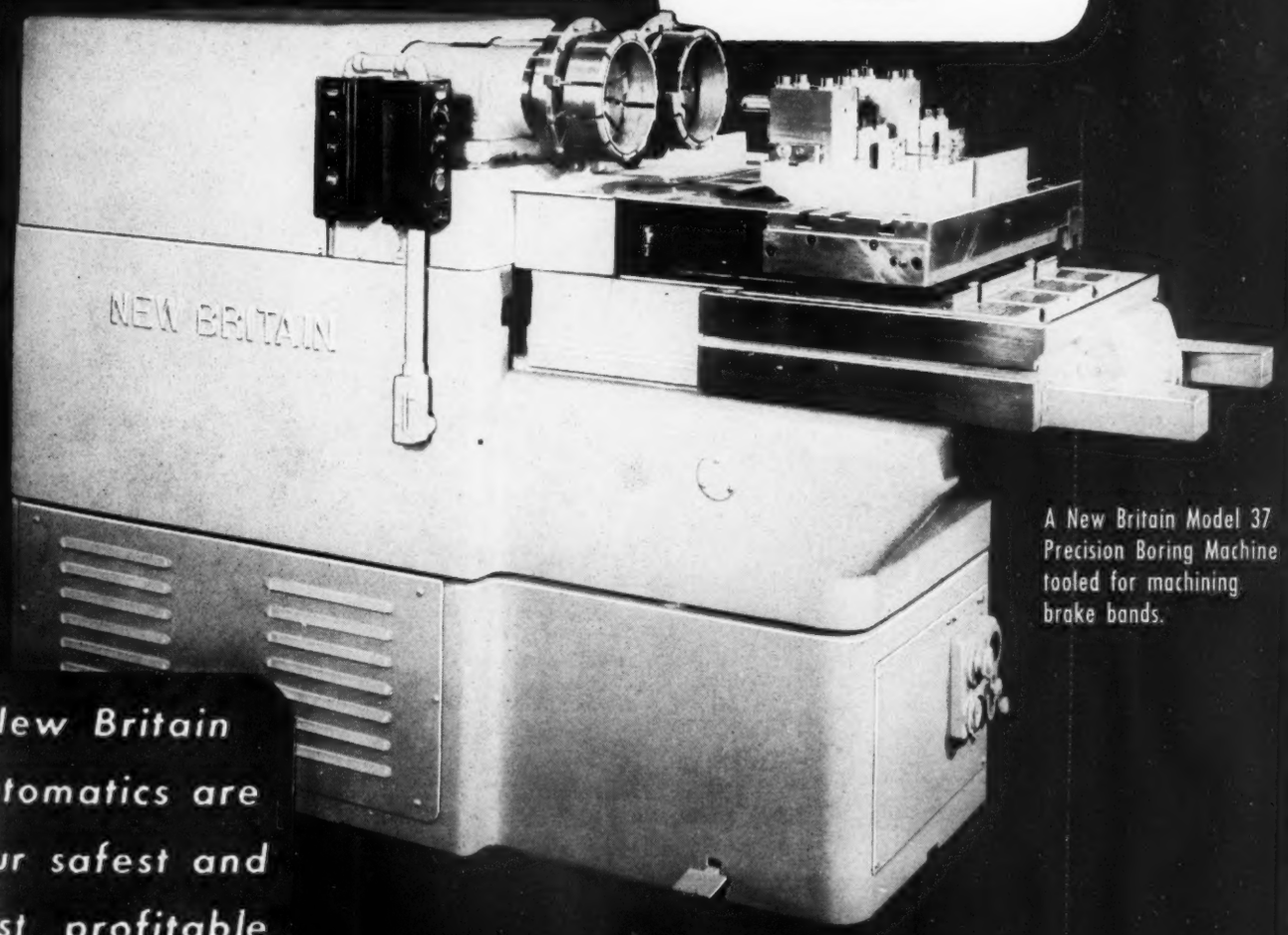

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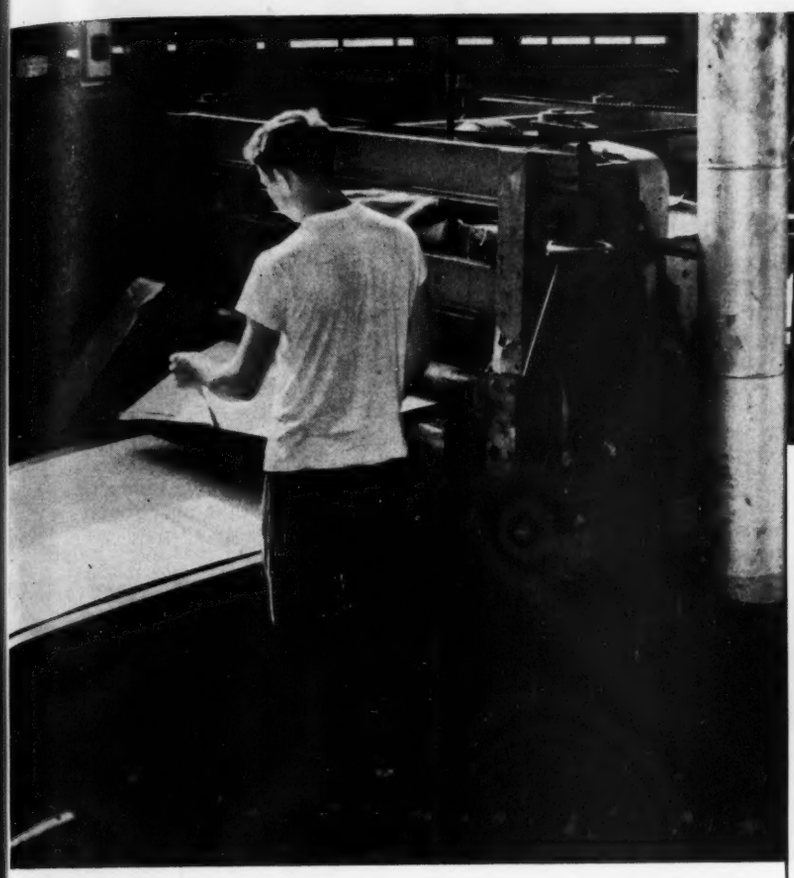
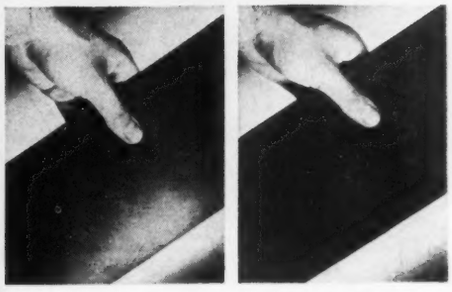
B&W SEAMLESS and WELDED TUBES

TA-15 5-M





Before Brushing — After Power Brushing

Backing on decorative laminate is "roughed up" automatically . . . at low cost by Osborn Power Brushing.

FOUND ten million tiny claws to scratch its back automatically

PERFECT bonding . . . the absolute requirement wherever quality materials are cemented together, counts heavily on proper surface preparation of mating members. Adjoining surfaces must be precisely finished with even, exacting "roughness" into which the bonding cement can key, and also be completely clean of loose particles.

To achieve correct and complete uniformity in the bonding surface at low cost, this leading manufacturer of decorative laminate sought to find a way of mechanically roughing the back of plastic sheets . . . to eliminate manual operations. The problem was solved by Osborn Power Brushing . . . industry's most versatile finishing tool.

As shown above, unit sections seven feet long are now taped together to form a continuous strip and fed through the brushing machine at a rapid rate of speed. Millions of sharp steel wire ends of an Osborn Heli-Master® power brush rotate at 1200 rpm, against the back, thus cutting or roughing in microscopic grooves to which bonding cement can anchor. Thickness of the sheet is held to within two-thousandths of an inch. A second brush, an Osborn Master®-Strip Rotary Brush, then efficiently cleans the loose dust left by the roughing operation.

Whether your work is roughing or precision-finishing metallic or non-metallic parts . . . or if your problem is cleaning or scrubbing . . . it's likely that your work can be done more efficiently, *at lower cost,* with new, improved Osborn brushing techniques. Why not have an **OBA** (**O**sborn **B**rushing **A**nalysis) made of your present brushing methods. Wherever improvements can be made by power brushing, the **O**sborn **B**rushing

YOU CAN IMPROVE FINISH AND CUT COSTS BY BRUSHING

Analyst will demonstrate how you can better the quality of your products, simplify your production and cut your costs. His services, backed by Osborn's extensive technical facilities, are yours on request. Ask today for an **OBA.** Simply call or write *The Osborn Manufacturing Company, Dept. 356, 5401 Hamilton Ave., Cleveland 14, Ohio.*

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.. in this new, low-cost

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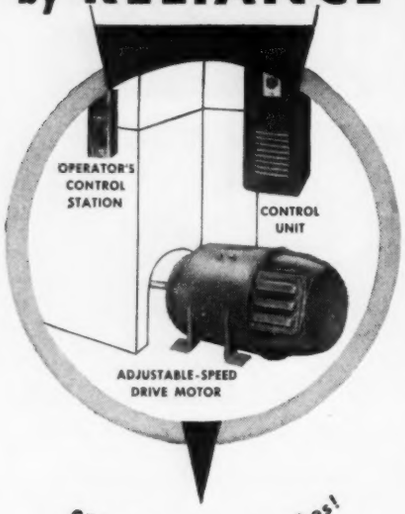

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REVERSES without use of gears or clutches!

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Behind the Scenes . . .

Quote

STEEL has just been quoted—from an issue of 1924. People from Armco Steel Corp. reached way back 26 years to capture some of the words of our Steel Plant Editor John D. Knox who then described Armco's new continuous rolling mill at Ashland, Ky., as "the most marvelous advance in steelmaking technology in our time."

Armco has just published a booklet outlining its history and describing its facilities. Any such history, of course, would mention the first continuous rolling mill ever used in successful commercial operation. Before the mid-twenties, steel had to be rolled by hand, a slow, costly and back-breaking operation.

Poetry Corner

We managed to snare a copy of opening remarks made by Wayne A. Johnston of Illinois Central Railroad at the Chicago Metal Show's business forum a while back. That forum, incidentally, was the first one at the Metal Show and was arranged and chairmanned by STEEL Editor-in-Chief Earl Shaner.

Mr. Johnston opened his talk with this tale: "One rainy afternoon the teacher of some small children kept them in during recess and asked each to recite a poem of his own composition. The first little boy was rather shy and said,

'My name is Sam,
And when I grow up to be a man
I want to go to Japan
If I can, and I think I can.'

"The next child was a small girl who said,

'My name is Sadie,
And when I grow up to be a lady
I want to have a baby
If I can, and I think I can.'

"The next child was a little tough boy who said,

'My name is Dan,
And when I grow up to be a man
I don't want to go to Japan like Sam,
I want to stay here and help Sadie with her plan,
If I can, and I think I can.' "

Fashion Note

Our spies report that a remarkable phenomenon has occurred at Lehigh Valley Structural Steel Co.'s plant at Allentown, Pa. A local department store sent out fashion models to show the workers what milady should be wearing these days. Right out in the yard of the plant, we understand, the girls paraded around just as calm as you please. Max Hess Jr., president of the store that staged the show, believes that men should have more to say about women's clothes.

We've sent our spy to Lehigh Valley President Tom Mullen to learn whether the plant production went up or down that fashion day.

Depreciation Day

Coming up in the Nov. 27 issue is the last in STEEL's formal series on depreciation and re-equipment reform. It will be a forum of metalworking and accounting opinion on what should be done for long-range improvement of government's and industry's depreciation and re-equipment policies.

The forum won't be the last in STEEL's coverage of the subject, but it is the final shot in the current series that included installments May 8, June 19, July 31, Aug. 21 and Oct. 9. Reprints of the Nov. 27 symposium will be available.

Puzzle Corner

In order to make a 10 per cent profit the bookie in the puzzle carried in the Nov. 6 issue would have to post 8 to 1 odds on Left-at-the-Post. Bets must be taken in proportion of 9 to 6 to 3 to 2 respectively. Charles E. Norton of Highland Park, Ill., and T. S. Bean of Barber & Ross Co., Washington, were tied for first place with the right answers.

William W. Johnson, a professional mechanical engineer of Cleveland, submits this one: Charley starts on a journey at 40 miles per hour and reduces his speed by 2 miles every hour for an integral number of hours. If he had maintained original rate, the journey would have taken 2¾ hours less. What was the distance traveled?

Shrdlu

(Editorial Index—page 61)

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $10; two years $15; all other countries, one year $18. Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

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1. ***"How Industrial Advertising Meets the Demands of Top Management"***
2. ***"How Industrial Advertising Helps Make Sales"***

Write to National Industrial Advertisers Association, 1776 Broadway, New York 19, N. Y. for these useful booklets. They're free.

• *This message—one of a series by members of the National Industrial Advertisers Association—is published by* STEEL *to create a wider understanding of industrial advertising and the contribution it is making to American industry. Reprints of this message are available in limited quantities. Address:* STEEL, *Readers Service Dept., Penton Building, Cleveland 13, Ohio.*

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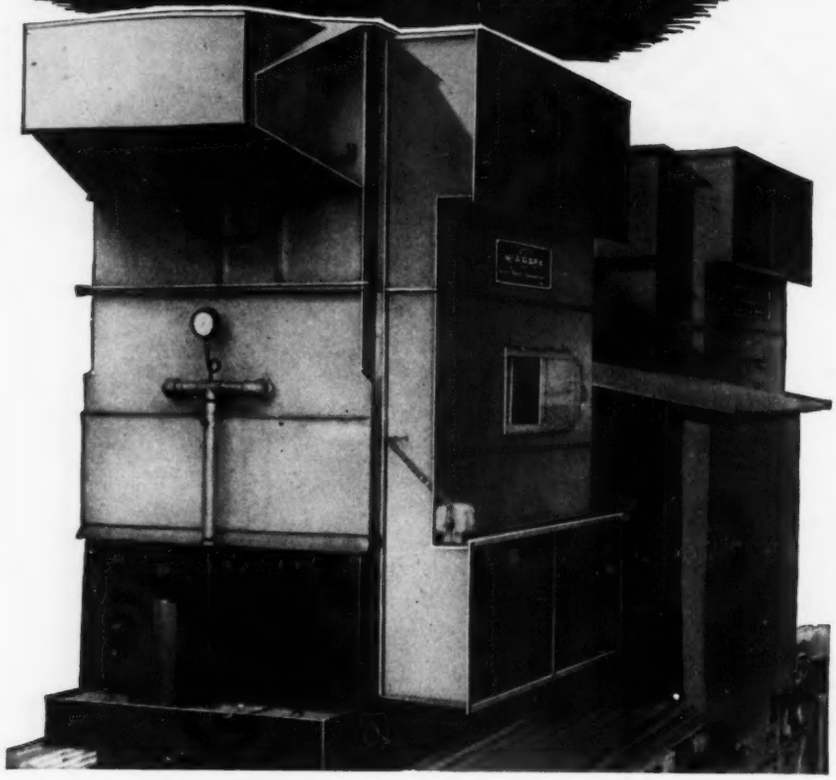
A CHAPTER OF THE NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION

A national organization, comprised of 3,500 members of the 34 local associations of industrial advertising and sales executives—dedicated to greater efficiency in industrial distribution—and lower sales cost.

Improve Physical Properties with NIAGARA "Aero" Cooling



• Better control of quenching temperatures improves the heat-treating process, gives better physical properties to steel, increases production with fewer rejections.

That is the experience with the use of NIAGARA AERO HEAT EXCHANGERS, providing faster and more accurate cooling to specified temperatures for quench baths, either oil or water. Production is increased; unit costs are lowered. Commercial heat treaters have increased profits; heat treating departments have contributed savings.

NIAGARA AERO HEAT EXCHANGERS are built in a range of sizes to fit any installation. Saving of cooling water quickly pays for the equipment.

Other applications include jacket water temperature control for process equipment or engines, cutting oils, lubricants, hydraulic oils, transformers, electronic sets, controlled atmospheres, compressed air or gas cooling.

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INDUSTRIAL COOLING HEATING • DRYING

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LETTERS
TO THE EDITORS

Down Under Comes to the Top

We are set up to produce 85 refrigerator cabinets and 100 washing machines per day. Sheet steel supply has become acute. Our government assures us dollars will be allocated for the purchase of sheet steel, providing we can get it.

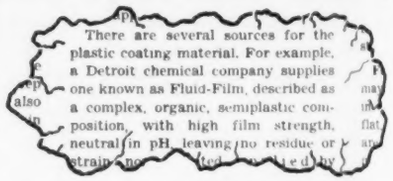
Although we know that steel is being diverted to defense projects in your country, we feel that this will not continue and that there will be a relaxation of export restrictions before very long. U. S. Steel Corp. and Armco Steel Corp. agents here advise that they are not open for business before 1951. It has occurred to us that certain small operators may be better able to handle our business, which requires 1200 tons per year of various sizes and gages from 16 to 22.

Ronald Harvey, Production Manager
Alex. Harvey & Sons Ltd., Auckland, N. Z.

• *We wish we could share this optimism on the relaxation of sheet steel supplies. To Mr. Harvey goes a list of U. S. sheet producers.*

Plagued by Finger Prints

In the April 17, 1950, issue of STEEL there appeared an article, "'Prepolishing' Before Forming," by A. H. Allen, Detroit editor. We now form shapes from prepolished aluminum plates. We have a problem resulting from die and finger marks resulting from handling


There are several sources for the plastic coating material. For example, a Detroit chemical company supplies one known as Fluid-Film, described as a complex, organic, semiplastic composition, with high film strength, neutral in pH, leaving no residue or

after polishing. We hope to eliminate the problem by protecting the surface with the right kind of water soluble film. In the above-mentioned article there is a reference to a coating (see inset). Can you advise where we can get additional information on this coating material?

Harry W. Cole, President
Packless Metals Products Corp.
New Rochelle, N. Y.

• *Plastic coating material information may be obtained from either Northwest Chemical Co., 9310 Roselawn, Detroit, or H. A. Montgomery Co., 17191 Swift, Detroit.*

ABC Across the Sea

Please accept my thanks for the copy of the sixth edition of *The ABC of Iron and Steel*, which I am taking to France with me. It was indeed a privilege and a pleasure to have the opportunity of working with you on this book which played a part in my securing my new position as assistant to the manager of SOLLAC at Thionville, France.

C. L. McGranahan

• *Mr. McGranahan is the author of the 55-page chapter, Production of Hot and Cold Rolled Strip and Sheets, in the "ABC", copies of which are available from* STEEL*'s book department.*

ANOTHER PRODUCT . . .

MADE BETTER . . .

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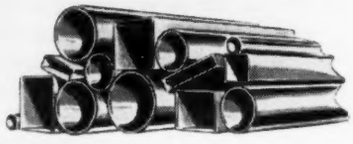

Republic Electrunite Mechanical Tubing is available in a wide range of sizes, gauges, and analyses—in both carbon and stainless steel.

Manufactured by the Republic electric resistance welding process, it is uniformly *high in ductility, surface quality, strength and accuracy of section.*

And for tubing users who do not have complete facilities for fabricating, Republic offers semi or full-fabricated tubular parts. Write for complete information.

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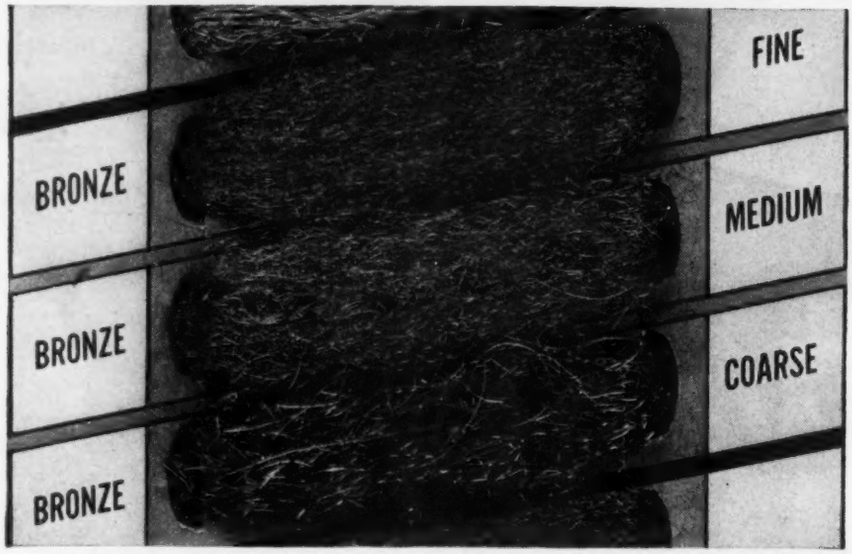
COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" Headquarters for BRASS, BRONZE and COPPER



Nonrusting bronze wool is used for air filters and finishing wood surfaces. (Approx. 2/3 actual size.) Courtesy Brillo Manufacturing Company, Inc., Brooklyn 1, New York.

Catching Dust with Silicon Bronze Wool

Everyone is familiar with the many uses for steel wool, which was developed for industrial and commercial abrasive use and about 35 years ago was adapted for scouring all types of kitchen utensils.

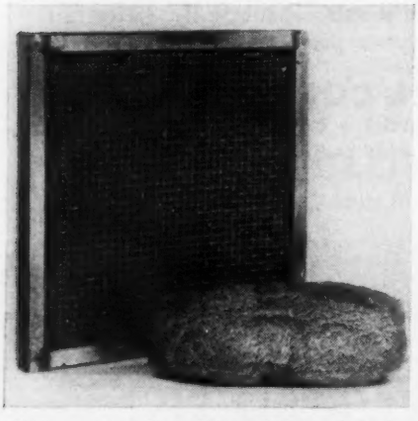
What uses can be put to bronze wool, which has similar properties to steel wool, but is nonrusting?

Brillo Manufacturing Company makes bronze wool from silicon bronze wire on the same type of equipment used for making steel wool. Boat builders and shipyards were the first to use bronze wool for rubbing down wood in the process of painting high-grade boats and yachts. They had found that microscopic slivers of steel wool which remained in the wood were subject to discoloration from rust, hence the switch to bronze wool.

Air Filters

The widest application for bronze wool is in the construction of air filters. Bronze wool consists of a mass of cross-stranded fibers, which are actually long, thin, resilient shavings. Under high-powered magnification the edges of the fibers appear extremely sharp and broken. The flat portion of the fiber generally shows a roughened surface with numerous cross checks. When air is forced through the bronze wool, it passes easily through the mass of fibers but the particles of dust are trapped by the roughened surfaces of the bronze wool. When the filter becomes clogged, it can be readily cleaned with high-pressure air, steam, or water and can be used over and over again.

Glass wool filters, on the other hand, are made up of smooth fibers which by themselves cannot intercept and hold dust particles. For this reason, they are covered with a film of oil or wax which remains sticky and separates the dust from the air stream. This type of filter is thrown away after it is clogged because it is not economical to clean. Since bronze wool is not generally coated with a combustible film, it presents no fire hazard.



Bronze wool air filters for ventilating and air conditioning can be readily cleaned with air, steam or water pressure. Courtesy Brillo Manufacturing Company, Inc., Brooklyn 1, New York.

Dirty Air Is Costly

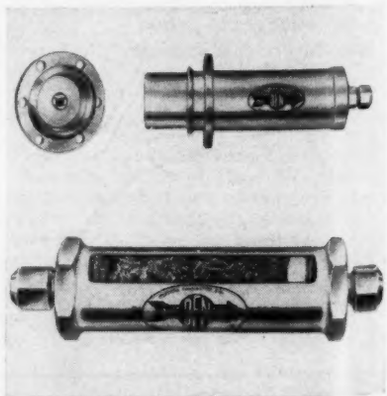
Because dirty air devaluates merchandise and ruins the appearance and life of drapes and furnishings, much attention has been given to the problem of supplying air free from dust, soot, pollen, and other solids. Hence the wide use of air filters for warm-air heating and air conditioning systems and air intakes for compressors in department stores, hospitals, office buildings, museums, homes, power plants and in many industries such as food processing.

An interesting application for bronze filters is its use in industrial vacuum cleaners to prevent metal particles from reaching the fan blades and motor.

Bronze air filters are also used in hoods over stoves in restaurants to prevent oil vapors from condensing in the flues and eventually becoming a serious fire hazard.

Bronze wool is excellent in the construction of dehydrators. Pads of wool at each end are used to seal the dehydrating compound but do not prevent the passage of air or gases.

The manufacture of bronze wool presents a problem to the supplier of silicon bronze wire because the fibers are really very long, fine shavings which must be flexible but without brittleness. It is the function of Bridgeport Laboratory to work with fabricators on their problems in order to supply metal suitable for their particular requirements.



Dehydrator used bronze wool pads to retain dehydrating compound. Courtesy McIntire Connector Company, Newark, N. J.

CAUSES OF CORROSION

This article is one of a series of discussions by C. L. Bulow, research chemist of the Bridgeport Brass Company.

Prevention of Corrosion in Storage (cont.)

Electrodeposited lead coatings on copper and copper alloys are used for tarnish protection. Tests made on lead coatings ranging from .00025" to .00050" in thickness on copper showed no amount of corrosion of the underlying copper after approximately 9 months' outdoor exposure in New York City, State College, Pennsylvania or Kure Beach, North Carolina.[1] Hot dipped coatings of lead on copper are used to prevent atmospheric corrosion products of copper from staining painted woodwork, stone, etc.

Cadmium and zinc coatings on brass and copper are sometimes used where the white colored tarnishes are preferred to the green and dark colored tarnishes, characteristic of copper.

In general, nickel coatings on brass and copper about .00025" thick last almost indefinitely indoors. In certain atmospheres "fogging" of nickel may occur. Consequently, chromium plate on nickel is widely used to prevent atmospheric corrosion of brass equipment in storage and actual use. A layer of chromium about .00002" thick on .00025" thick nickel offers considerable protection. The ASTM Specification (B141-45) covers three types of electrodeposited coatings of nickel and chromium on copper and copper-base alloys. Coatings are .0001",.0003" and .0005" in thickness (minimum) for nickel and .00001" in thickness (minimum) for chromium. These coatings are used on a wide variety of items.

Other metals such as gold, rhodium, and platinum are used to prevent tarnishing or corrosion of mechanical parts under certain conditions of storage or infrequent or continuous use.

Vitreous enamels, glass coating or porcelain enamel are essentially glass fused to the metal surface. The protection given by these materials depends upon the composition and physical properties of the enameling glass. Under most atmospheric conditions of storage or use considerable protection is obtainable.

[1]H. H. Uhlig, Corrosion Handbook, p. 857 (John Wiley & Sons) 1948.

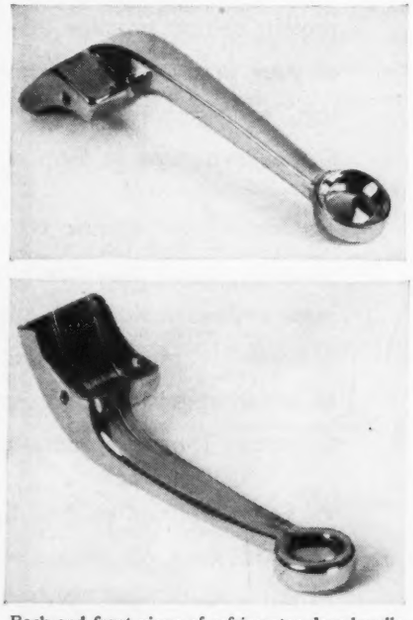
Sheet Metal Refrigerator Handle Cuts Buffing Costs

Polishing and buffing of gracefully designed products, such as the illustrated refrigerator door handle, are costly operations if the base metal is rough.

In an effort to reduce costs, yet maintain flowing lines, the company decided to fabricate the handles from sheet metal instead of castings or forgings.

Since strength and rigidity were needed, red brass (85% copper and 15% zinc) was selected. Due to its ductility, it was possible to carry out the drawing and forming operations on the handles without any annealing leaving them in a work-hardened condition with sufficient rigidity to withstand bending and denting from normal use.

Using highly polished drawing and forming tools, the surface of the metal was kept smooth and buffing held to a minimum prior to plating. The button is gold plated. The remainder of the handle is nickel-chrome plated. Copper-base alloys not only are easy to plate but hold their plate for long periods of time by combatting normal corrosive conditions.



Back and front views of refrigerator door handle fabricated from red brass—Courtesy Nameplate & Monogram Company, Spencerville, Ohio.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Turning Attachment to mount on a compound or cross slide of a lathe provides work support for long slender sections, tapers and forms. Rotating steadyrest mounts the work piece in a collet. Tools are advanced by vertical and horizontal slides to cutting position. Feed employs the lead screws on the lathe. **No. 1099**

Toolmakers' Microscope permits linear, coordinate and angular readings for a work range to within a 6½" cube and magnification of 32 X. Work mounts in stage riding ways on the base for free adjustment by hand. Accurate adjustment and measured movement are by push action from the non-rotating stem of a micrometer head mounting a 20-thread screw. This thread measurement assists in measuring calculations. **No. 1100**

Reciprocating Drill Head provides rotating drive and also reciprocates the drill axially through an axial movement of .007". The resulting action is to break up any chips that tend to come out in long spirals. Chips are all short and feed freely from the drill hole. **No. 1101**

Universal Testing Machine employs knife-edge pivot levers connected to calibrated steel elastic beams in weighing system. Machine can be used for tension, compression, flexure, shear and transverse tests. Loading is mechanical with crosshead speeds infinitely variable from .005" to 6" per minute. Working space between columns is 20" with 14" crosshead stroke. **No. 1102**

A Cross-Drilling Fixture said to accommodate a wide range of industrial cross-drilling operations utilizes four double-ended bushing plates with removable bushings to cover drill size range. Handles parts with 7/32" to ½" OD, to any length. Spring kick out ejects work. **No. 1103**

Scrap Briquetting Press converts low grade metal turnings, borings, chips and shavings into dense cylindrical metal blocks. Scrap steel, cast iron, brass, magnesium, bronze or aluminum so treated are said to be suitable for direct charging into cupola as high grade scrap. **No. 1104**

Hand Lever Bar Cutter will handle up to 1" round, ⅞" square and ½" x 3" flat stock. Features one-piece steel frame and top-opening knife slot that facilitates feeding and cutting of stock. **No. 1105**

Automatic Drill Head will drive 0.0135" to 0.1800" holes in ferrous and non-ferrous metals, plastics and woods. Motor supplies power for drilling, while self-contained air compressor advances drill at predetermined speed and pressure. **No. 1106**

Universal Vise provides four separate planes of adjustment for grinding, drilling and milling. Vise can be used on any surface or tool grinder, or on drill presses or other machines with or without table slots. Unit is made up of four separate rotating parts each with circular scale of 360°. **No. 1107**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL

"Bridgeport" BRASS

BRIDGEPORT BRASS

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you can have *both*

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STEEL

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NEWS

★ Letters to the Editors ... 8
★ As the Editor Views the News ... 63
★ News Summary ... 67
1954 Steel Goal: 120 Million Tons ... 69
Steelmaking Total Will Set New High ... 69
Plates Are No. 1 Problem ... 70
Magnesium Capacity To Jump 400 Per Cent ... 71
NPA Orders Aluminum Cutback ... 71
Labrador Ore Shipments To Start in 1955 ... 73
Steel Wage Agreement Near ... 75
Why Steel Prices Are Going To Go Up ... 75
★ Windows of Washington ... 76
Government Money Increases Europe's Capacity ... 79
★ Mirrors of Motordom ... 83
★ The Business Trend ... 86
★ Men of Industry ... 90
★ Obituaries ... 95

PRODUCTION-ENGINEERING

★ Production and Enginering News at a Glance ... 97
Explosive Forces Widen Metallurgical Studies ... 98
Simulated Test Conditions Eliminate Brazing Defects ... 99
Design Simplicity Key to Blower Wheel Manufacture ... 100
★ Seen and Heard in the Machinery Field ... 103
Overhead Tiering Expands Storage Space ... 104
Spinning and Skinning Eliminated by New Vise ... 106
Wiremakers Evaluate New and Existing Facilities ... 108
Cold Mill Steps Up Thomas Steel Capacity 120,000 Tons ... 113
★ Progress in Steelmaking—New Flexible Roof Construction Cuts Furnace Maintenance Cost ... 116
Tin-Zinc Alloy Can Replace Cadmium ... 118
A-1 Steel from Low Grade Coke ... 121
Torque Converter Parts Shrink Fitted ... 122
★ Calendar of Meetings ... 128
★ New Products and Equipment ... 131
★ Helpful Literature ... 141

MARKETS

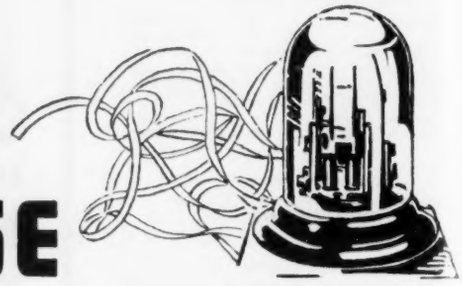
★ Market Summary ... 143
★ Metal Prices and Composites ... 144
Metals Controls Programs Outlined ... 150
★ Metalworking Briefs ... 166

★ *Denotes regular features*

Advertising Index—Page 174. Editorial Index available semiannually; STEEL also is indexed regularly by Engineering Index Inc., 29 West 39th St., New York 18

Next Week... **Magnesium Sheet Hot Formed at Less Cost... Planned Power Answer to Overloads... How To Prevent Disintegration of Blast Furnace Linings... Metalworking Executives Agree Depreciation Reform Is Needed**

WAR TALK *about* WAREHOUSE STEEL SERVICE



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November 20, 1950

Arithmetic

Critics of the steel industry will do well to read the address of Benjamin F. Fairless, president of United States Steel Corp., delivered before the American Petroleum Institute in Los Angeles last Thursday. Mr. Fairless devoted his remarks chiefly to two points on which the steel industry has been subjected to considerable criticism—steel capacity and steel prices.

As to capacity, Mr. Fairless points out that in World War II the "steel industry built everything that it could, as fast as it could, and the government stepped in and built plants of its own; but it took the industry and the government, working together, nearly four years to build as much new steel capacity as the industry alone will now build in the next two years, without government participation."

Mr. Fairless is impatient with critics who assume that "the steel industry is going to stop at 110 million tons. . . . Long before the end of 1952, when our present program of construction is completed, more new plans will have been announced and more new projects undertaken." As if to confirm this, Secretary of Commerce Charles Sawyer, after conferences with steel and defense officials, estimated capacity at the end of 1954 will total 120 million tons.

Mr. Fairless linked the problem of expansion with those of wages and prices. He said the fifth round of wage increases is well underway. Men in automobiles, oil, rubber, etc. have had increases this year. Steelworkers have not. They should not be discriminated against.

If U. S. Steel should grant increases similar to those already granted in other industries, the cost would be $6 a ton. Price increases in scrap, refractories, fuel oil, palm oil, copper, nickel, spelter, tin, aluminum and zinc ore concentrates cost U. S. Steel $4 per ton.

To pay this extra $10 out of profits, as some critics propose, "is not only a matter of dividends," said Mr. Fairless. "It is also a matter of investment and expansion. . . . Reduction in earnings means a corresponding reduction in ability to expand. . . . So if the cost of making steel should rise 10 per cent . . . it would be inevitable that the price of steel should do likewise."

This is arithmetic the critics of steel should ponder carefully.

* * *

VILLAINS AND HEROES: Washington Editor E. C. Kreutzberg has come up with an impressive sidelight on the results of the recent elections. He points out that the administration-union coalition was aiming particularly at the political extinction of congressmen who voted for the Taft-Hartley amendments contained in the Wood bill.

Here is what happened: Of the 209 congressmen who voted for the Wood bill, 197 sought re-election or election to some other public office. Two were elected to the Senate, two were elected governors, 190 were re-elected to the House and three who ran for re-election in the House were defeated. The score: Of 197 marked for defeat by the Truman-Union combine, 194 were successful and 3 were defeated. This is a batting average of .98477 against the frenzied pitching of the Truman administration, big city political machines and the combined might of union bigwigs.

After the election returns had been digested a prominent CIO publication came out with this candid statement: "To pretend that labor took

(OVER)

anything but a licking would be kidding ourselves."

We take exception to this frank confession. "Labor" didn't take a licking. "Labor," meaning union and non-union employees, did a magnificent job. They told the union dictators to go jump in the lake.

The villains in the Nov. 7 elections were the dictatorial union bosses. The heroes were the workers who, ignoring orders, voted as their consciences dictated. —p. 76

* * *

CONSTRUCTION IN '51: Officials of F. W. Dodge Corp., which has been compiling statistics on the construction industry for many years, estimate that construction in 1951 will be down 19 per cent from the 1950 level. This estimate contemplates a 35 per cent drop in residential building, a 10 per cent decline in nonresidential building and no change in the volume of heavy engineering projects.

The estimate is based upon the assumption that Regulation X, imposed in October, will prove to be more severe than intended and will be modified during 1951. Should it remain unchanged, the drop in residential building will be greater than the 35 per cent estimated.

However, if the Dodge estimate proves to be fairly accurate, manufacturers who cater to the construction industry have little to worry about. The projected activity for 1951 is second only to 1950 in dollar value and compares favorably with other prosperous construction years in physical volume. —p. 88

* * *

GLAMOR IN LABRADOR: If you seek glamor to take the edge off the sordid troubles of the moment, take a look at the problems confronted by the interests who are developing the rich ore resources in Labrador. They are contemplating expenditures of $200 million or more in order to begin shipments of ore in 1955.

Due for early construction is a 360-mile railroad from the mines to the St. Lawrence, mining and handling facilities at the ore body, docks at the St. Lawrence terminal and water transportation to lower lake unloading docks. Already some of the most capable engineering and construction companies in the United States and Canada are under contract to begin work on this important undertaking. Considerable preliminary work will be done during the winter months so that when spring comes, construction can be pushed to the limit.

In time, this project may prove to be a major factor in the continued expansion of the American iron and steel industry. —p. 73

* * *

NO SPINNING, SKINNING: A bench vise is indispensable in every manufacturing plant. If you ever used one frequently, you can recall how you spun the handle vigorously to open or close the jaw to receive the work. Also, you may remember how easy it was to raise a blood blister on the tender skin of your hand between thumb and forefinger when the ball end of the handle came down against the socket.

Dodge Mfg. Co. has developed a vise which does away with this spinning and skinning. A turn and a half of the handle in a counterclockwise direction places the jaw in a neutral position. It can be pushed in or pulled out to grip the work. Once the work is engaged, the vise operates in the conventional manner. The handle is designed so that it cannot pinch the hand of the operator.

These improvements seem simple, but they will save a lot of time and considerable cussing. —p. 106

* * *

STRESSED REINFORCING: Among the papers presented at the annual meeting of the Wire Association in Baltimore was one describing a promising market for high-carbon wire in concrete construction.

One method is to stretch the wire to a predetermined initial stress and then pour the concrete over it. After the concrete sets, the wire is released. This causes compression in the concrete. Another method is to pour a concrete beam with a longitudinal hole near its lower fiber. After the concrete hardens, wires are placed in the hole, stretched to a predetermined stress and anchored at the ends. The hole is filled with grout.

Under the first method called prestressing, or the second known as poststressing, the strength of the concrete structure is increased substantially over that of one reinforced in conventional manner. It will be interesting to watch the development of new applications of this technique. —p. 108

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

CONTROLS—Look for a system of complete allocation controls covering key materials to emerge during the first half of 1951. All signs point in that direction. Defense officials openly admit the present piecemeal system will bog down as the armament program develops. The new system will be similar to the Controlled Materials Plan of World War II.

GET IN THE ACT—If your plant is adaptable to production of war materials, better start planning what you can make now. Otherwise you may be out of production when steel, aluminum, copper and other materials are doled out under a new CMP. Conversion to war production this time may be a permanent program. Military men believe the garrison state economy may continue for many years—perhaps a century—unless allout war develops.

MATERIALS—The materials pinch will be progressive. Aluminum, alloy steel and carbon plate consumers will feel it keenly the first of the year. Other carbon steel products may be fairly free during the first quarter, possibly the first half (p. 70), depending on how fast the rated programs can be developed.

EXPANSION—Construction programs to provide even greater steel capacity will be pushed. The goal now is 120 million tons by the end of 1954 (p. 69) and more than 110 million tons by the end of 1952. Six government-owned magnesium plants will be reactivated (p. 71) to raise capacity for this metal by 400 per cent. Look for action on applications for fast amortization to be speeded up to encourage new plant construction.

REPUBLIC GROWS—Most recent large expansion program is that of Republic Steel at Cleveland. Company will add 672,000 tons of ingot capacity at a cost of $75 million. Facilities will include: Four open hearths; a 1400-ton blast furnace; 126 coke ovens; a 72-inch tandem cold reducing mill; new soaking pits; improvements to blooming mill and other major betterments. Work will start immediately and the facilities will be pouring steel early in 1952.

WAGES, PRICES—Announcement of a steel wage agreement may come soon. Negotiators are reported near a settlement which would grant steelworkers about 10 per cent more (p. 75). The wage announcement may be followed shortly by an increase in steel prices. Ben Fairless says steelmaking costs, after the wage increase, will be up 10 per cent.

PLATING RUBS THIN—Car owners talk about common-sense passenger car models but when they buy it's usually the model that sports a lot of chrome trim and that is why plating is the auto industry's No. 1 headache (p. 83). Nickel is tight and no relief is in sight. Substitutes are being considered and tried but the public may give them a cool reception. Copper in place of nickel is one solution but it too is expected to become extremely tight.

MILLIONS FOR ORE—Backers of the Labrador-Quebec iron ore deposits will start work immediately on necessary railroad, mining and handling facilities. Financing arrangements involving $200 million were announced last week and even the icy blasts of a Canadian winter won't hold up work on the railroad right of way, construction camps and tunnels (p. 73). George M. Humphrey who heads the Iron Ore Co. of Canada says ore from the new field will be competitive with Lake Superior ores delivered at lower lake ports even without the St. Lawrence seaway.

HERE AND THERE IN INDUSTRY—Jones & Laughlin is opening a million-tons-a-year underground iron ore mine near Negaunee, Mich. (p. 72) and expects to complete installation next year of a high-speed halogen-type electrolytic tinning line at its Aliquippa, Pa., works that will double its tinning capacity (p. 73) . . . Banks are turning thumbs down on many defense loans (p. 76) because the comptroller general has ruled that they will be liable for any recovery that a renegotiation board may find due the government . . . Kropp Forge Co. acquired from Ordnance Tank Automotive Center of Detroit its forge plant at Melvindale, Ill. (p. 80).

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1954 Steel Goal: 120 Million Tons

Expansion plans expand. More than 110 million tons expected by end of 1952. Many new construction projects awaiting government nod on rapid amortization

MORE steelmaking capacity is being planned. Expansion by the end of 1952 will result in more than the 110 million tons which was indicated earlier. By the end of 1954, steel capacity may grow to 120 million tons.

That means not only the building of more open-hearth, electric and bessemer furnaces, but more blast furnaces, coke ovens, finishing equipment and facilities to provide more raw materials.

The estimate comes from Secretary of Commerce Charles Sawyer, after conferences with industry and defense leaders.

Rapid Amortization—Industry will be given an assist in financing the tremendous cost of this expansion. Certificates of necessity will open the way for faster writeoffs of the costs. Many projects now on the drawing boards are awaiting favorable government action on fast depreciation.

New steel capacity now costs around $300 a ton. And construction costs are still going up. Steelmakers say prices would have to be increased sharply if brand new facilities built at today's costs are to show a profit.

All We Can Get—Mr. Sawyer does not agree with some of the more radical Washington people who ask for impossible expansions. "We should have all the steel expansion we can effect from now on, considering immediate needs of the military and a reasonable volume of civilian demand. But we must be reasonable. If we want 120 million tons by the end of 1952, that is just not possible. But we can reach that capacity in four years, and I am encouraged to believe we will get it."

Balance—In analyzing the fast amortization requests covering the expansion programs submitted by the first five steel companies to make application, the Commerce Department finds that while these programs are satisfactory on their own individual bases, they do not satisfactorily balance with each other. For example, the projected pig iron expansion does not match up with the ingot expansion. More blast furnaces are needed.

Each program will be considered in the light of the overall expansion program in an effort to avoid bottlenecks. The Commerce Department suggests that some of the expansion plans submitted may require revision.

More Stacks—Considerable interest attaches to plans for new blast furnaces. At least five are being considered, in addition to those already announced.

Republic Steel Corp. is reported to be planning a new 1300-ton blast furnace at Cleveland. The go-ahead on the project may be dependent on negotiations for faster amortization. Meanwhile the company is withholding official confirmation of the plan.

Armco Steel will build a new stack at Middletown, O., and Great Lakes is building one in the Detroit district. One is being figured for the West, one for the South and at least two in the Midwest and East.

OBE To Pass on Amortization

An Office of Business Expansion will be established in the National Security Resources Board to pass on applications for accelerated amortization of plant facilities. Byron Woodside, assistant director of corporation finance in the Securities & Exchange Commission, is expected to head the bureau. The bureau is designed to speed up expansion of industrial capacity by providing government approval for writing off the cost of expansions in five years for tax purposes.

Steelmaking Total Will Set New High

UNITED STATES steelmaking furnaces will pour nearly 97 million tons of steel during 1950, topping all records.

That will exceed by 19 million tons the ingot production in 1949 and will be about 7 million tons greater than the best previous year, 1944, when 89.6 million tons of steel was produced.

This year's output by the United States will be more than three times the estimated production of Russia and her European satellites. The output of these countries is not expected to exceed 30 million tons.

It will be more than 5 times the production of Great Britain, which is producing at an annual rate of 19.2 million tons.

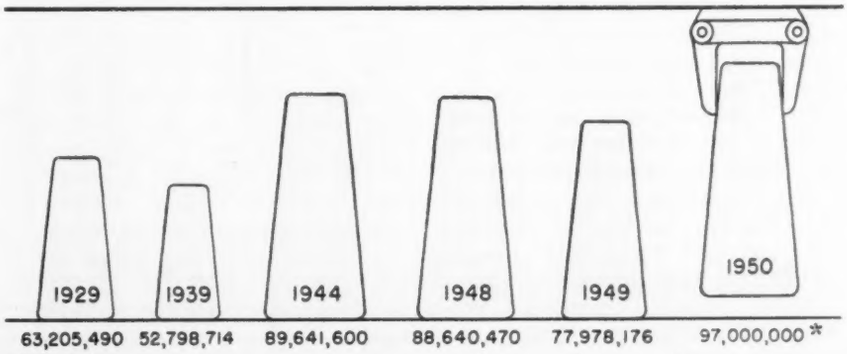
October Best Month—Production in October reached 8,718,978 tons, the largest month on record. For seven consecutive months output has exceeded 8 million tons. Mills have been reaching toward new weekly production records in November and no letdown is in sight, barring strikes or other unforeseen circumstances.

The production for the first 10 months of 1950 totaled 80,320,510 tons, according to American Iron & Steel Institute figures.

The Cost Runs High—The October achievement indicates that steel production is being aided by the companies' huge programs of expansion and improvement which are being undertaken at a record high cost. By the end of 1952, the industry

97 Million Tons of Steel By Yearend

. . . about 7 million tons better than 1944



*Estimated

will be able to make 22 per cent more steel than actually was made in the peak year of World War II.

Plates No. 1 Worry

Consumers complain quotas cut sharply by mills. NPA ponders directive to raise output

PLATES now are the chief worry of the National Production Authority's Iron & Steel Division. Complaints galore have been received from consumers. Some say the mills have cut them off altogether; many say their quotas have been reduced as much as 40 and 50 per cent.

NPA believes the plate situation can be remedied by stepping up plate production to 600,000 tons or more monthly. It hopes the mills will be able to achieve this goal by independent action but is prepared to issue a directive, if necessary, to bring about that amount of plate production by the beginning of the first quarter.

Outlook: Fair—Aside from the plate situation, the supply-demand outlook is in fair balance for at least the first quarter and perhaps the first half of 1951. It now seems a good bet that no civilian uses of carbon steel will be cut in the first half.

Of course, the situation could change; Congress might rush an additional defense appropriation of $20 billion or thereabouts through in December, and the Defense Department might then start another big procurement program; even so, it would take some time to enable the new production lines to start consuming steel on a big scale.

Brakes Taking Hold—One factor that encourages the expectation of a fairly balanced supply-demand situation in the months ahead is the effect of the recent brakes on consumer credit. Government economists estimate that the credit controls will cut steel civilian demand at least 5 per cent in the first half.

Another factor contributing to the easier outlook in steel is the surprise discovery by NPA that defense needs will be even smaller in the second than in the first quarter. As of now—on the basis of everything that is in sight—DO-rated defense steel for military purposes is to come to about 1.5 million tons in the first half, or about half the original estimate.

Steel for Boats—The second defense-support program, for lake vessels, will take 70,000 tons of steel. Allocations have been approved.

Three Interior Department programs, for petroleum, mining and power generation, will be considered next. These were given the go-ahead last week, although they are expected to meet considerable opposition.

Wide World

SERPENTINE: Snaking its way through the air is a portion of an expansion bend in a steam line serving Socony-Vacuum's Magnolia petroleum refinery at Beaumont, Tex. In the background is a new thermaform catalytic cracking unit under construction

The petroleum industry wants nearly 12 million tons of steel for its program in 1951. This includes more than 1.5 million tons of plates, nearly 1.5 million tons of sheets, and 7.4 million tons of tubular goods. During 1950, the petroleum industry will get about 10 million tons of steel products.

Requirements for expansion and maintenance, repair and operating supplies of the mining and power generating programs are not as clearly drawn as for the petroleum program, but will supply a substantial drain to steel supplies.

Other Programs Lag—Other programs, for agriculture, motor trucks, barge lines, locomotives, appear to be limping along. There are grave doubts that these will be set up soon.

NPA wants to avert, if possible, a situation in which a major portion of total steel output would be locked up by priorities and allocations.

NPA Administrator Harrison told a press conference his agency is going to avoid any needless acts that would put the civilian economy in a straightjacket.

When the Need Arises—General Harrison cited the aluminum order (p. 71. this issue) as an example of NPA's policy in interfering with normal economic activities. The order cutting civilian aluminum consumption by 35 per cent was decided on when it became apparent that that percentage of the total current supply is needed for defense. The situations in tungsten, nickel, cobalt, cadmium, zinc and manganese, he said, indicate that orders limiting their use may be issued.

Orders will not be issued, though, until the need arises.

Lake Vessel Steel Allocated

Second allocations program, for lake vessels, placed by National Production Authority calls for 30,354 tons of steel over the first quarter for 12 vessels and includes: Nine ore carriers, one limestone carrier and two car ferries. Part of the 70,000 tons of steel for these vessels will be shipped in the fourth quarter without allocations and the remainder will be allocated for second quarter. Orders were placed with 15 mills for monthly shipments aggregating 7424 tons of plates, 2046 shapes, 630 bars and 18 tons hot-rolled sheets. Total is 10,118 tons per month. Defense Transport Administration estimates new ore carriers will permit transportation of an additional 7 million tons of ore annually.

October Ingot Output Biggest Yet

Period 1950	—Open-hearth— Net Tons	% Capac.	—Bessemer— Net Tons	% Capac.	—Electric— Net Tons	% Capac.	—Total— Net Tons	% Capac.	Calculated Net Tons Weekly	No. weeks in mo.
Jan.	7,131,519	96.5	379,252	80.6	419,601	71.9	7,930,372	93.9	1,790,152	4.43
Feb.	6,142,178	92.0	255,565	60 2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	265,726	55.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st. Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
May	7,597,837	102.8	437,006	92 9	517,044	88.6	8,551,887	101.3	1,930,449	4.43
June	7,218,570	100.9	406,944	89.3	506,001	89.5	8,131,515	99.4	1,895 458	4.29
2nd Qtr.	22,131,140	102.0	1,251,859	90.6	1,513,075	88.2	24,896,074	100.4	1,913.611	13 01
1st Half	42,152,517	97.7	2,152.402	78.3	2,801,808	82.2	47,106,727	95.5	1,820,902	25.87
July	7,220,214	96.9	380,317	79.8	470.763	78 4	8,071,294	94.7	1,826,085	4.42
Aug.	7,315,215	98.0	405,118	84.8	509.984	84.7	8,230,317	96.3	1,857 859	4.43
*Sept.	7,264,264	100.7	409,216	88.7	526.540	90.6	8,200,020	99.3	1,915,893	4.28
*3rd Qtr.	21,794 390	98.5	1,194.651	84.4	1,505,764	84.4	24,494,805	96.7	1,865 560	13 13
*9 mos.	63,946,907	93.0	3,347,053	80.4	4,307,572	82.9	71,601,532	95.9	1,835,937	39.00
†Oct.	7,720,762	103.4	436,765	91.5	561,451	93.3	8,718,978	102.0	1,968,167	4.43

Note—The percentages of capacity operated in the first 6 months are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906.268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons. Beginning July 1, 1950, the percentages of capacity operated are calculated on weekly capacities of 1,685,059 net tons open hearth, 107,806 net tons bessemer and 135,856 net tons electric ingots and steel for castings, total 1,928,721 net tons; based on annual capacities as of July 1, 1950, as follows: Open hearth 87,858,990 net tons, bessemer 5,621,000 net tons, electric 7,083,510 net tons, total 100,563,500 net tons.
* Revised. † Preliminary figures, subject to revision.

Magnesium Capacity To Jump 400 Per Cent

Six Government-owned plants will be activated to raise potential output to 240 million pounds annually. Demand now exceeds supply by million pounds monthly

MAGNESIUM production capacity will jump from 48 million pounds to 240 million pounds annually within the next six months, members of the Magnesium Association heard at a New York meeting.

The 400 per cent increase will be possible because six government-owned stand-by plants will be reactivated. Amco Magnesium Co. will operate the Wingdale, N. Y., facility with a capacity of 10 million pounds annually; Diamond Magnesium Co. will take over at Painesville, O., to produce 36 million pounds; Dow Chemical Co. at Velasco, Tex., 80 million pounds; Electro Metallurgical Co. at Spokane, Wash., 48 million pounds; New England Lime Co. at Canaan, Conn., 10 million pounds; and Permanente Metals Corp. at Manteca, Calif., 20 million pounds.

Restrictions—The industry has had to impose voluntary allocations because military and civilian buyers want 5 million pounds a month and only 4 million pounds are now available. The controls have cut non-military shipments by 36 per cent since Nov. 1. Edward S. Christiansen, president of Magnesium Co. of America and president of the association, says magnesium consumption is increasing more rapidly than that of any other metal. Commercial buyers alone took 29.9 million pounds in 1946, 30.2 million in 1947, 38 million in 1949 and an estimated 43 million in 1950. Commercial users may take 75 million pounds in 1951 and 102 million in 1952.

The metal's light weight is a factor contributing to increased use in materials handling and transportation equipment. Because cement will not stick to or corrode it, magnesium is finding new uses in the construction industry. The use of magnesium as an anode to protect steel from corrosion is an increasingly important application. A trend in the aluminum industry is toward use of aluminum-magnesium alloys. Between 5 million and 10 million pounds of magnesium will eventually be needed annually in production of ductile cast iron. Magnesium is the reducing agent employed in production of titanium and zirconium. About one pound of magnesium is needed to produce one pound of titanium.

Bullish—Members of the industry are optimistic about magnesium's future, if only because the sources from which it may be extracted are practically inexhaustible. One process gets it from sea water. Mr. Christiansen predicts eventual production of 1 billion pounds annually.

The industry isn't relying on government stand-by plants alone for its expansion. Dow is building large continuous rolling mills for more economical production of magnesium alloy sheet. The facilities, at Madison, Ill., will be in production in early 1952.

Watch Your Step

A Compliance Division is being organized by the National Production Authority, to function under Manly Fleischmann, general counsel. While no complaints yet have been received about alleged noncompliance with NPA orders, says Administrator Harrison, the new division will be ready if noncompliance develops.

SLICK SCRAPER: This new 24-story, air-conditioned office building being readied for January occupancy at 655 Madison Ave., New York, makes use of 60 tons of what will soon be a scarce item—aluminum, which was used instead of face brick. The building's facade uses 747 double-hung windows, 888 spandrels and pier covers and 4 miles of trim. Sash and mullions are extruded aluminum; spandrels and pier covering are cast aluminum in 4-foot-square panels

Ask Preferred Treatment

NPA's Machine Tool Industry Advisory Committee has requested preferred treatment under which members of this industry would be able to obtain materials and parts and accessory equipment required to support their production schedules. Joining with the machine tool men were representatives of the press manufacturing industry.

Aluminum Cut Back

Civilian consumers to get 35 per cent less, starting Jan. 1. Other cuts coming

THE PINCH is on among manufacturers making civilian products containing aluminum because NPA has ordered a 35 per cent cut in civilian consumption, effective Jan. 1.

NPA Administrator William H. Harrison says civilian consumption cutbacks are also being considered for cobalt, zinc, tungsten, cadmium, manganese, copper and nickel. The action on aluminum is one of the most drastic yet taken by the agency which controls the distribution of most scarce materials.

Rough Weather for Storm Windows—Mr. Harrison says the severe cut was necessary because "upwards of 30 per cent" of next year's aluminum supplies already are slated for authorized defense programs. More programs needing aluminum are certain to come up. The military now is taking between 20 and 30 per cent of available supplies. The cut back applies to rods and bars, wire, cables, rivets, forgings and pressings, impact extrusions, castings, rolled structural shapes, extruded shapes, sheet, strip and plate, slugs, foil, tubing, tube blooms, powdered, ingot, pig, billets, slabs and scrap. Civilian users may take only 65 per cent of their consumption in the first half of 1950. Firms using less than 1000 pounds of aluminum a year are exempted.

Hard hit by the ruling will be makers of aluminum storm windows, roofing and siding and household ware. Many of these manufacturers may eventually be able to switch to military items, but the shift is expected to be slow and painful.

Controls Mandatory

All production controls issued by the National Production Authority,

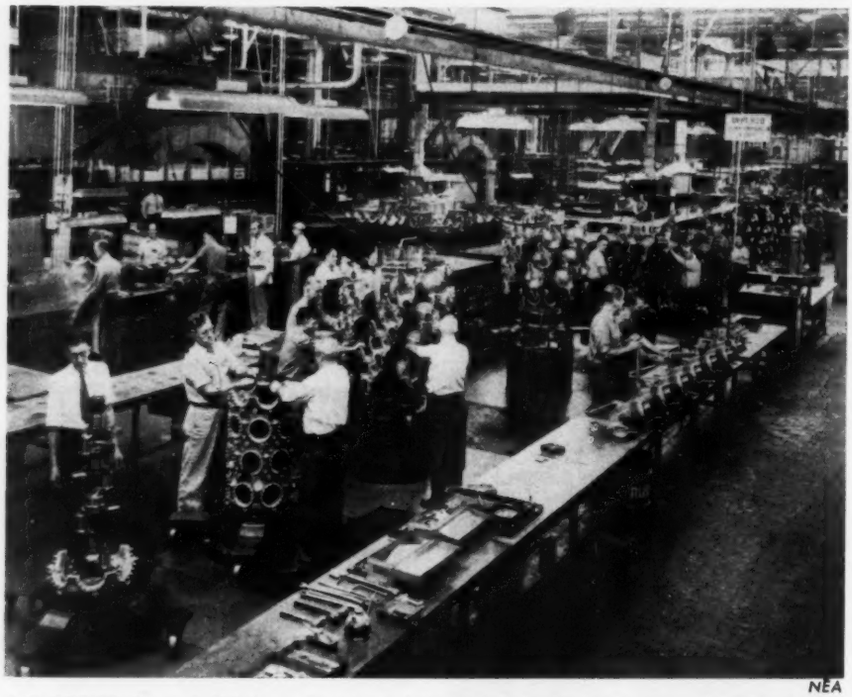
will be mandatory and require compulsory compliance, says Secretary of Commerce Sawyer. In the early stages of defense production planning the use of voluntary agreements with industry had been considered. Mr. Sawyer now belives voluntary agreements "just won't work."

Convair Returns to Plant 2

Expanding production at Consolidated Vultee Aircraft Corp., San Diego, Calif., makes it necessary for the company to move back into its war surplus Plant 2. K. F. Leanon, San Diego division manager, says about 1000 of Convair's 13,000 employees ultimately will be affected by the shift. The space is being leased from a private company that bought all of Plant 2 after the war.

AEC Ratings Assigned

Defense order priority ratings 40 through 44, assigned by the National Production Authority to the Atomic Energy Commission, have been applied to AEC requirements as follows: DO-40, operation; DO-41, construction, except construction equipment; DO-42, construction equipment; DO-43, prime and subcontractors' privately-owned facilities; DO-44, other privately-owned facilities. In general, the symbols DO-40 through DO-42 are being used on contracts and purchase orders for items purchased by or for the AEC. The symbols DO-43 and DO-44 are being used on contracts and purchase orders for construction material and capital equipment purchased by private concerns for their own account but for use on AEC work.



NEA

AIR FORCE: Pratt & Whitney Division of United Aircraft Corp. says it will need an additional 10,000 employees for its work force in the next year. The reason: Accelerated engine production for the Air Force and the Navy

Koppers Opening Butadiene Unit

Koppers Co. Inc. will place the first unit of the government-owned butadiene plant at Kobuta, Pa., in operation this month and a second unit in January. B. J. C. van der Hoeven, vice president of Koppers Chemical Division, says a force of about 150 men are working at top speed to reactivate the two units of the plant. Reactivation was ordered a few weeks ago by Reconstruction Finance Corp., Office of Rubber Reserve, when it became apparent that more butadiene was needed for the nation's synthetic rubber program.

Rheem Will Make Refrigerators

Rheem Mfg. Co. is preparing to produce and market a new gas-absorption type of household refrigerator, president R. S. Rheem says. The refrigerator, developed by Clayton & Lambert Mfg. Co. of Louisville, will be made by Rheem under an exclusive arrangement just concluded between the two companies. It will be sold under the Rheem name. Further testing and design study will be carried on before manufacture of the unit in commercial volume. Manufacture of a gas refrigerator will be a natural to Rheem: It already makes a line of water heaters and heating equipment utilizing gas.

Steel Shortage Causes Halt

Shortage of steel halted Kelvinator refrigerator and electric-range production at the Grand Rapids plant of Nash-Kelvinator Corp. last week. Production of mechanical systems also ceased at the Detroit plant at the same time.

Empire To Spend $10 Million

Empire Steel Corp. will carry on a $10 million expansion program for its Mansfield, O., mill. The project is designed to raise the mill's ingot capacity by about 20 per cent and would turn the plant into a heavy hot rolled strip coil mill. Rolling capacity of present facilities is 21,000 tons a month. The new construction will make possible a potential rolling of 45,000 tons a month. Work starts immediately.

J & L Opening Ore Mine

Underground Tracy mine will produce about 1 million tons of iron ore per year

JONES & LAUGHLIN Ore Co., wholly owned subsidiary of Jones & Laughlin Steel Corp., is opening up a new 1-million-ton-per-year underground iron ore mine at Negaunee, Mich. It will be called the Tracy mine. Chief reason for its opening is to provide ore for the requirements of the corporation's steel expansion program.

Fifty years ago J & L was one of the big operators on the Marquette iron range, but as Minnesota properties were brought into production, J. & L's activities on the Marquette range gradually dwindled. By 1919 the firm no longer operated on the range.

Diamond Drill — The Tracy mine will be located on lands purchased from the Breitung interests in 1921. For the last ten years J & L carried on a diamond drill exploration program on the property. The drilling was the first application of modern drilling techniques in the Lake Superior district; core recovery for the Tracy drilling was above 80 per cent in general, including ore zones.

The Tracy shaft will be centrally located and all of the company's ore bodies in the Negaunee area will be mined through it. Because three railroad companies use tracks that pass over the ore bodies, it will be necessary to relocate several miles of main line tracks.

Labrador Ore Shipments To Start in 1955

Railroad, mining and handling facilities construction to get underway this fall as backers arrange $200 million financing for development work. Project not dependent on seaway

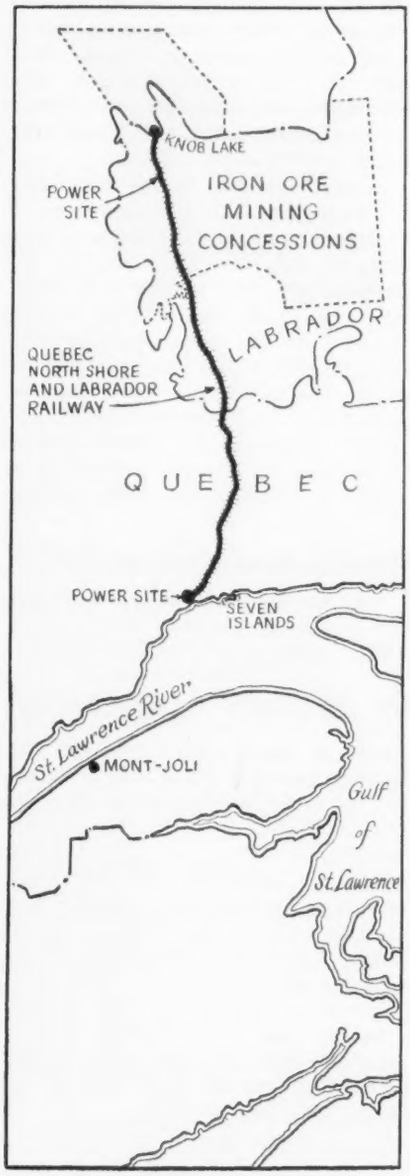
A 360-MILE railroad and mining and handling facilities necessary for the development of the Labrador-Quebec iron ore deposits will be started immediately. Shipments of iron ore are expected to start in 1955 and to reach 10 million tons annually soon thereafter.

This season's drilling program has developed more tonnage and the total drilled and proved ore now exceeds 400 million tons of high-grade, open-pit, direct-shipping ore.

Big Money—The project was revealed last week as arrangements for financing development of the deposits in the amount of $200 million were announced. George M. Humphrey, president of both the M. A. Hanna Co. and the Iron Ore Co. of Canada, the operating company organized to handle the Labrador-Quebec enterprise for Hanna, the Hollinger interests of Canada and five associated American steel companies, says the capital structure of the operating unit authorizes up to $125 million of first mortgage bonds, $40 million of income debentures and $60 million of common stock. Arrangements have been made for the purchase of the senior securities by 15 American and four Canadian life insurance companies. Junior securities will be taken by the stockholders of the Iron Ore Co. of Canada on a pro rata basis according to their various interests. Companies involved are: Armco Steel Corp., Hanna Coal & Ore Corp., Hollinger Consolidated Gold Mines Ltd., Hollinger North Shore Exploration Co. Ltd., Labrador Mining & Exploration Co. Ltd., National Steel Corp., Republic Steel Corp., Youngstown Sheet & Tube Co., and Wheeling Steel Corp.

Working on the Railroad—The operating company retained the engineering firms of Stone & Webster, Cloverdale & Colpitts, and Sanderson & Porter, who have been working recently on plans for the 360-mile railroad from the ore deposits to the port of Seven Islands on the St. Lawrence river. They have worked as well as on plans for necessary equipment, townsites, power plants and terminal handling and loading facilities.

Contracts for building the railroad —to be known as the Quebec, North Shore & Labrador Railway — have been let to a group of contractors headed by Cartier Construction Co. Ltd. Equipment is being moved in and construction will begin before winter sets in.



Till Spring Breaks Through—Work of clearing the right of way, building of construction camps and service airfields will proceed during the winter. Construction of several tunnels and heavy rock cuts near the St. Lawrence end of the line will be started. Work will continue on a heavy schedule as soon as spring permits. Then the Canadian Government will start construction of the ore loading dock.

Plans for developing large new sources of iron ore production, says Mr. Humphrey, demonstrate the steel industry's determination to be prepared to fulfill requirements of U. S. and Canada for this vital raw material regardless of what the emergency may be or how great the demand for steel may become. He says even without the St. Lawrence seaway—which his organization is behind 100 per cent—Labrador-Quebec iron ore will be competitive with Lake Superior ores delivered at lower lake ports. They are going ahead with their plans regardless of the outcome of the seaway question.

Salem Builds Continental Furnace

A single-zone pusher type billet furnace for Continental Steel Corp.'s new rod mill in Kokomo, Ind., is being designed and built by Salem Engineering Co., Salem, O. The furnace will heat steel bars 2½ inches square and 30 inches long at a nominal rate of 60 tons per hour. It will be equipped to burn heavy fuel oil and will be complete with Salem's needle-type recuperator. Construction is scheduled to start early in 1951.

Pennsalt Shifting Output

All production now remaining at Pennsylvania Salt Mfg. Co.'s Easton plant will be shifted to its plant at Cornwell Heights, Pa., by Dec. 31. Pennsalt is spending about $250,000 for new equipment and facilities improvement at the latter plant. Included in the transfer are production facilities for several laundry and dry cleaning products, emulsion-type metal cleaning compounds and the eastern reshipping point for hydrofluoric and anhydrous hydrofluoric acids.

R. W. Tomlinson, superintendent of the Easton plant, was appointed superintendent of the Cornwell Heights plant, replacing R. O. White who is to become superintendent of Pennsalt's new plant now under construction at Montgomery, Ala.

Tinning Line Doubles Capacity

Installation of a high-speed halogen-type electrolytic line at Jones & Laughlin Steel Corp.'s Aliquippa, Pa., works is expected to be completed late next year. Project will double J&L's electrolytic tinning capacity. Current output of tin mill products is at a 325,000 ton annual rate or 6.5 per cent of the national total. It is equal to about 10 per cent of the company's overall finished steel output and is three times production a decade ago.

Plans call for a 60 per cent expan-

sion in tin plate facilities at the Aliquippa Works. Besides the tin plate line, new facilities include: Two-stand temper mill, electro cleaning line and additional annealing and coil preparation equipment.

Company also plans to augment its open-hearth expansion at the Pittsburgh South Works from the presently scheduled addition of six 250-ton open hearths rated at 1 million tons annually. There is room for five additional open hearths at the plant.

Standards Conference Slated

American Standards Association wanted to explain itself and its work to the heads of American corporations, so it put together a clever little booklet titled "Standards Are Your Business." It emphasizes the intrinsic value of nation-wide standards rather than company or industry standards and tells how the national standards mean dollar savings to manufacturers and consumers.

The association, for 32 years the clearinghouse for engineering, commercial, consumer and safety standards in the U. S., will sponsor a National Standardization Conference in New York's Waldorf-Astoria, Nov. 27-29.

Weirton Steelmaking Filmed

Weirton Steel Co. employees are in the show business these days. Modern steelmaking methods are being filmed in the Weirton mills for a 30-minute sound movie being sponsored by the company. Cameramen have been shooting interesting and exciting operations at the mill as well as the scenic sights of West Virginia.

Several agencies of the state and the Bureau of Mines of the Interior Department also got in the act. Besides the Mountain State's industries, the film will show cities, transportation, agriculture, conservation, recreational and tourist attractions and facilities. The film is Weirton's answer to the great demand for a picture of its type for educational institutions, chambers of commerce and other civic, fraternal, military and religious organizations in the nation.

Republic Forms Speakers Bureau

Another steel company doing a public service is Republic Steel Corp., Cleveland. It has formed a Speakers Bureau to serve program chairmen of civic, fraternal, church and school clubs in the Greater Cleveland area. Each of the ten speakers is an authority on some phase of the steel business. A few of the subjects and speakers: "Steel for Bicycles, Bazookas and Bigbees," Ralph W. Baker, market and product analyst; "What's the Score?," William P. Carlin, economist; "Doin' What Comes Naturally," Russell Widmer, assistant manager of the commercial research division; "The High Cost of Economic Ignorance," Ben Bennett, public relations department.

'Mirrors' Editor Will Take On National Assignments

FOR THE past 13 years, STEEL's popular feature "Mirrors of Motordom" has been written by A. H. "Art" Allen, giving you as readers, his behind-the-scenes reports on what the automobile industry is planning and thinking. This week, Art moves from Detroit to STEEL's home offices in Cleveland where he takes on a national assignment: Reporting on the many subjects that are going to be of special interest to you in the critical months ahead.

Art's duties in the auto capital are being transferred to the capable hands of Howard C. Tuttle. He was gaining practical experience in industry when he was called to serve in World War II as an Air Force lieutenant.

Howard came to STEEL in 1945, where he handled varied writing and editing duties in the Cleveland office. Since 1948 he has been Chicago News and Market Editor.

STEEL's editorial activities in the Chicago area are in charge of Erle F. Ross. Erle has been a Chicagoan since 1940 and has been writing for STEEL since 1919.

HOWARD C. TUTTLE
. . . Will write about automobiles

ARTHUR H. ALLEN
. . . "Mirrors" editor goes to Cleveland

Priorities Only a Start

NPA General Counsel Manly Fleischmann thinks last war's CMP may be reinstituted

NATIONAL Production Authority's present priority system is designed to insure materials for the present military program and will not work if Congress authorizes expansion to $50-$60 billion, says Manly Fleischmann, NPA general counsel. In that event World War II's Controlled Materials Plan would be reinstituted and supply of available materials would be allocated to essential civilian needs, industry maintenance and military requirements.

As in the last war the CMP would be built around steel, aluminum and copper as the three most important basic metals. Mr. Fleischman sees no possibility of needing a change to CMP before the third quarter 1951. He believes it will take several months after the need for such a program becomes apparent to gather and train the 5000 to 10,000 people needed to administer it. No move in the direction of CMP will be taken unless Congress votes a big expansion in the military program and it becomes apparent total materials requirements will be much larger than now.

Realtors See Gunnison Homes

Gunnison Homes Inc., prefabricated housing subsidiary of U. S. Steel, announced its 1951 line to delegates attending the annual convention of the National Association of Real Estate Boards last week. The realtors got a look at the Coronado, a contemporary ranch-style that features low pitched roofs, wide overhanging eaves, sweeping horizontal lines and large picture windows. It will be available next January in five sizes, containing two and three bedrooms. Its price: In the $7000 to $10,000 price range.

NEA

CHILL ON SCIENCE: Dr. Samuel C. Collins, left, professor of mechanical engineering at the Massachussetts Institute of Technology, and Lloyd B. Smith, technician, remove the cover from the well of the 15-cubic foot "Cryostat," just completed at MIT. It will be used for fundamental research on the properties of materials at low temperatures. It is expected that large-scale experiments can be tried with the machine at lower continuous temperatures than ever before possible

Wage Agreement Near

Announcement may come at Chicago CIO convention. Ten per cent increase seen

WATCH for announcement that U. S. Steel and the union have agreed on the amount of the steel wage increase most any day now. It may come at the CIO convention in Chicago.

While wage negotiations this year have been conducted in the strictest secrecy, labor and industry observers believe the parties are near agreement.

They think that the settlement will add up to about a 10 per cent increase. Negotiations were recessed last week.

Flair for Dramatic—Those who believe the announcement may be made at Chicago point to the good will that would accrue to both the union leaders and the companies. They recall that the break in the pension dispute was announced at the 1949 convention and brought the huzzahs of union members.

They believe that announcement of a 10 per cent increase would bring a thunderous ovation to President Phil Murray and other union leaders for bettering the general industrial pattern.

Timken Grants 10 Per Cent

Timken Roller Bearing Co. and the CIO United Steelworkers signed a wage agreement providing for a 10 per cent increase for 13,000 employees in six Ohio plants. The increase will range from a minimum of 12½ cents an hour for common labor to 30 cents in some skilled classifications.

The wage agreement will continue to July 19, 1952, when the company general contract with the union expires. It contains no reopening provisions.

Foundrymen Get 5 Cents

Chicago Foundrymen's Association, representing 30 ferrous and nonferrous foundries in the Chicago area, has granted a wage increase of 5 cents an hour to members of the International Molders & Foundry Workers Union—AFL. The raise was retroactive to Oct. 30. The equivalent of an additional 8 cents an hour will be applied to the wage rate effective May 1, 1951.

Weirton Negotiations Open

Labor contract negotiations between Weirton Steel Co. and the Independent Steelworkers Union are underway at Weirton, W. Va. The ISU recently defeated the United Steelworkers-CIO in a collective bargaining election.

Paychecks Get Fatter

Workers' paychecks have been getting fatter this fall at the fastest pace on record. That's the opinion of Department of Labor wage specialists after studying recent wage increases, many of which were intended to beat an expected freeze of pay rates.

Wage adjustments in September and October affected close to 2 million workers. The boosts range from 3 cents an hour for Philadelphia leather workers to 25 cents an hour for Knoxville, Tenn., sheet metal workers.

NEA

RUDE AWAKENING: Preparing for an experiment in the sound-proof room at the Aero-Medical Laboratory at Wright-Patterson Air Force Base, Dr. H. O. Parrick gives the go-ahead signal to Dr. H. E. von Gierke, left. Sleeping guinea pigs are used for the experiments in this exclusive study to determine the effects of noise on hearing. Wedge-shaped acoustical insulation is fiber-glass; siren in the background produces the intense sounds

Why Steel Prices Are Going To Go Up

RAW MATERIAL price increases this year are costing the United States Steel Corp. the equivalent of $4 a ton on all steel shipped.

If the corporation grants a 15-cent-an-hour wage increase, the higher labor cost would amount to $6 a ton on all finished steel.

Together, these add up to $10 a ton, or about 10 per cent of the average price of finished steel products. Figures are those cited by U. S. Steel President Ben Fairless before the American Petroleum Institute in Los Angeles Nov. 16.

Price Rise Inevitable — Says Mr. Fairless: "If the cost of making steel should rise 10 per cent, it would be inevitable, I think, that the price of steel should do likewise."

A 10 per cent rise in steel prices, says Mr. Fairless, would amount to less than 1 per cent on the selling price of an automobile, a bridge or a battleship. It would add less than 4 cents to the price of a $22 automatic toaster, 60 cents to the price of a washing machine, and $37 to the cost of a $10,000 home.

Profits Needed To Expand— U. S. Steel spent more than a billion dollars for expansion in the past five years and will spend a great deal more in the current expansion program, says Mr. Fairless. "Whether these new facilities are paid for by reinvestment of earnings, borrowing, or new stock issues, there is one undeniable fact that must be recognized: Any reduction in earnings means a corresponding reduction in the ability to expand."

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Defense Loan Boomerang

T-H Men Advance Anyway

Government Employees Now

Korean War Ruins BLS

Banks are turning down defense loans right and left because of a renegotiation hitch . . . Supporting T-H didn't hurt much . . . NPA chiefs are government men

HOT FIGHT over handling of guaranteed loans to defense contractors is going on between the Commerce Department, Federal Reserve System and the comptroller general. Under Federal Reserve's Regulation V, the loaning contractor must assign his contract to the bank advancing the loan. That's all right. But the comptroller general ruled that it makes the bank liable for any recovery that a Renegotiation Board may find due the government. And that's bad. Unwilling to assume the risk, banks are turning down defense loan applications right and left. Thus, one of the main purposes of the Defense Production Act—making working capital available to contractors—is being nullified in large part. Some parties to the quarrel say the best solution is for Congress to enact S. 3625. It embodies the loan plan originated by Walter Bimson, banker of Phoenix, Ariz.

T-H Won't Be Repealed . . .

Capital political wiseacres say the 1950 election results give proof positive that the Taft-Hartley Act will not be repealed. Among other lessons, the results show that legislators who defy labor union leaders do not necessarily court oblivion.

In 1948 there was negligible mortality among members of Congress who voted for Taft-Hartley in 1947. The 1950 showing was even more striking. Labor's political action drives in 1950 were aimed particularly at House members who voted for the T-H act amendments known as the Wood bill.

Here's what happened in the 1950 elections: Of the 209 House members who voted for the Wood bill, 197 sought re-election, or election to some other public office. Two were elected to the Senate—Nixon of California and Case of South Dakota; two were elected governors—Lodge in Connecticut and Barrett in Wyoming; 190 ran for the House and were re-elected three ran for re-election to the House and were defeated.

Equally interesting is the lesson that supporting labor leaders' causes is no guarantee of political success. Mortality among Wood bill opponents was much heavier. Of 187 who sought re-election in 1950, four were defeated in the primaries and 28 in the November elections; two ran for governor and were defeated; five ran for the Senate, three being defeated and two—Monroney of Oklahoma and Smathers of Florida—were elected.

You're Dealing With 'G' Men . . .

When you deal with William Henry Harrison as NPA administrator, or David B. Carson, as director of NPA's Iron and Steel Division, or with any of the other industry men brought to Washington to carry out purposes of the Defense Production Act, you're dealing with a bona fide government employee legally authorized to act for the government. That's what NPA has ruled with the approval of the Department of Commerce. It helps do away with previous confusion and uncertainty.

Section 710b of the Defense Production Act authorizes the President, "subject to such regulations as he may issue, to employ persons of outstanding experience and ability without compensation." The section specifically exempts such persons from the customary requirement that only men on government payrolls can act for the government. It was that requirement that led to the employment of "dollar-a-year" men in World War II.

John Steelman's White House staff is writing regulations governing the employment and use of industry men without compensation. An agreement has been reached that terms of the regulations will not alter the status of employees like General Harrison and Mr. Carson who already have been sworn in.

BLS Revision Soon . . .

Interim revision of the Bureau of Labor Statistics' consumers' price index is to be effected in December or at latest in January. BLS had been making a long-range study with the intention of applying the revision in mid-1952. But economic changes since our entry into the Korean war have been so profound that, in its opinion, a part-way revision is needed now. Starting in December or January, the index will include many living costs not heretofore encompassed: Baby foods, frozen foods, cost of maintaining the family automobile, tobacco, prepared flour mixes, etc. And the radically changed rent picture is to be reflected.

New Munitions Board Chief . . .

The Munitions Board again has a chairman, sworn in Nov. 16 on an interim basis subject to Senate confirmation. He is John D. Small, who headed up reconversion in 1946-47 as chief of the Civilian Production Administration. He is well qualified for his new task from previous experience.

In 1942 and 1943, he was deputy director of the former Army-Navy Munitions Board. Since 1947 Mr. Small had been president, Maxson Food Systems Inc.

GSA Getting in the 'Act' . . .

Look for a General Services Administration announcement soon of regulations under which it will carry out its assignments under Defense Production Act. Regulations include: 1. Installation of additional facilities in government-owned plants, and installation of government-owned equipment in privately-owned plants; 2. purchase of metals, minerals and liquid fuels, over and above stockpile requirements, for government use and resale; 3. guarantee of loans to prime contractors and subcontractors.

Government Money Ups Europe's Capacity

ECA funds and local government financing boost Europe's steel potential by 18.3 per cent since 1939. Private funds back most of America's 22.4 per cent increase since 1939

THE STEEL capacity of Western Europe (except West Germany) has increased 18.3 per cent since 1939—with the help of $1.9 billion in American Marshall Plan dollars. The steel capacity of the U. S. has increased 22.4 per cent since 1939—and most of the government money that went into that expansion has been or is being repaid.

The steel ingot capacity of Great Britain, France, the Saar, Belgium, Luxemburg, Italy, Spain, Sweden and Austria is now about 41.4 million net tons annually. It was about 35 million tons in 1939. The yearly steel ingot capacity in the U. S. is now 100.2 million tons. It was 81.8 million tons in 1939. If West Germany's steel production were figured into Western Europe's performance, the area's capacity increase would be much lower because the Ruhr's steel output is now 37 per cent below the 1939 level.

Pump Primer—The Marshall Plan poured $1 billion into British steel plants, $600 million into French facilities, $130 million into Swedish, $110 million into Austrian and $63 million into Norwegian. German steel plants thus far have received $38 million in Marshall Plan money.

Those figures don't tell the whole story of government financing of West Europe's steel capacity increase because local European governments have underwritten much of the expansion costs not backed by ERP funds. The British government is participating heavily in the capacity increase of Steel Co. of Wales; the French government is financially involved in Usinor's large expansion plan. Those two projects are among the biggest in Western Europe.

German Steel Plants Obsolete

German steel plants are obsolete and need re-equipping. That was a theme song at a meeting of Verein Duetscher Eisenheutenleute, the German equivalent of the American Iron & Steel Institute.

Ruhr steel men lament that they have received only $38 million in Marshall aid thus far. They claim that the world steel shortage could be considerably relieved if they had anything like the capital available to British and French producers.

If they ever get enough money, the Germans would first rebuild the August Thyssen Huette, to achieve an ingot capacity of 1.5 million tons annually or more. The expansion would include installation of a continuous hot strip rolling mill.

Members of the German steel institute are backing the Schuman plan because they think the necessary capital may become available when the industry pool finally gets into operation.

Bonn is tightening export quotas on Ruhr steel to help relieve the domestic shortage, particularly severe in tin plate and sheets. Total exports now amount to only 10 or 15 per cent of steel production. No new export orders are being accepted now. Partly responsible for the situation is domestic hoarding. German steel users expect a price rise because coke prices are climbing and are hedging against the anticipated action by steel companies.

French Steel Output Soars

France and the Saar produced 1,106,000 net tons of steel ingots in October, better than the record 1929 average. September output slightly exceeded 1 million tons. The nation's exports are mounting, and in 1951 she plans to ship between 400,000 and 500,000 tons of bars to the U. S.

Heavy steel production made possible the alltime record output of French automobiles in October. Assemblies in the month reached an annual rate of some 430,000 units. Most of the cars are exported, and domestic buyers must wait 12 to 18 months for delivery, except for Ford models which may be had in about two months.

Volkswagen Again

PRODUCTION of Hitler's Volkswagen will begin next January at the Studebaker assembly plant at Uitenhage, near Port Elizabeth in South Africa.

The cars have beetle-shaped bodies, with a rear engine, no hood and the windshield continuing in a smooth line to the front bumpers. Parts sufficient to assemble 300 cars in the first half of next year will be imported from Germany, in exchange for South African wine.

The Volkswagen has a four-cycle, air-cooled engine which develops about 12 horsepower. The vehicle will sell for $1100.

British Production Near Peak

Britain produced steel ingots at the annual rate of 19,084,800 net tons in October, the second best month in history. The best was last March when steel was turned out at the annual rate of 19,204,640 tons.

ECA Helps in Italian Project

Marshall Plan dollars will finance an additional $2,165,000 of the costs of a steel mill project for the Finsider plant at Cornigliano, Italy. Finsider is a government sponsored steel producer.

A total of $26,223,000 is being financed with ECA dollars in a Marshall Plan industrial project for steel mill equipment for three Finsider plants, at Bagnoli and Piombino, as well as at Cornigliano. The ECA financing represents about 24 per cent of the total cost of the project, estimated at the equivalent of $111 million. About $21 million of ECA's $26.2 million will go to Cornigliano.

The new allocation of $2.2 million will finance the purchase of United States electrical equipment and motors for an 80-inch hot strip mill and a cold strip mill for the Cornigliano plant, and for engineering services in connection with installation of the equipment.

Original plans called for the purchase in Europe of all electrical equipment for the new mills. But a survey of European manufacturers has determined that about 37 per cent of the parts needed have never been produced in Europe.

'Y' Type Cold Mill in France

Mackintosh-Hemphill Co., Pittsburgh, sold a 20-inch "Y" Type reversing cold strip mill to S. A. Etirage et Laminage du Nord for installation in Jeumont (Nord), France.

The new Mackintosh-Hemphill mill, soon to be installed by "Etilam," will cold roll and coil up to 16-inch widths of low carbon, high carbon and alloy steels. It will work on 0.125 in. thick hot-rolled strip and roll it down to 0.010 in. or less.

It is the first "Y" type reversing cold strip mill to be installed in France.

X-RAY SIGHTS: General Electric X-Ray Corp.'s first direct-recording x-ray diffraction machine, set up for fluorescent analysis, was among the sights during a special tour by members of the Society for Non-Destructive Testing. Left to right are J. W. Ranftl, GE's x-ray diffraction expert; Dr. G. H. Tenney of the Los Alamos Scientific Laboratory; Mrs. Tenney; Arthur Berman, also of Los Alamos; James Bly, materials engineer, Pratt & Whitney Aircraft Corp., East Hartford, Conn., and N. C. Miller, Los Alamos

Kropp Does It Again

For the third time in three years the Chicago forging company is expanding facilities

THIRD STEP in Kropp Forge Co.'s plant expansion program, begun in 1948, is announced by Roy A. Kropp, president of the Chicago firm. He reports negotiations were successfully completed for acquisition from Ordnance Tank Automotive Center of Detroit of its forge plant at Melvindale, Mich. The plant comprises 148,000 square feet and was formerly occupied by Timken-Detroit Axle Co.

The acquisition marks the third time in as many years that Kropp expanded its production facilities. In August, 1948, Kropp bought a modern forge plant for production of wartime aviation forgings from the War Assets Administration. That plant was 380,000 square feet in area and adjacent to Kropp's main Chicago plant. Last year the company got A. C. Woods & Co. of Rockford, Ill., and at that time entered the steel fabrication and heavy weldment business.

Sheer Necessity — Since the outbreak of the Korean war, says Mr. Kropp, the company's defense orders have doubled last year's average monthly volume. That made acquisition of the new facilities a necessity. Work is beginning immediately to convert the Melvindale plant to Kropp's specific uses. Right now Kropp's armament output is 25 per cent of its orders, but Mr. Kropp thinks the percentage will grow even larger when the new facility is in full-scale production.

The Melvindale plant has excellent machinery: Various sized upsetters, presses and large hammers that will be used to produce forgings for Army Ordnance. When the new plant gets rolling it will employ approximately 800 workers.

Royal Metal Holds Open House

When industrialists from around Galt, Ont., and surrounding communities got together not long ago, they got an eyeful of one of Canada's newest industrial structures, the plant of Royal Metal Mfg. Co. Ltd. They saw the new building offices, showroom and warehouse of the company that is the nucleus of a larger development of the growing company. Royal Metal, manufacturer of metal furniture for offices, hospitals, factories, schools and commercial establishments, put its three-quarter-acre plant on a seven and a-half acre site. When the project is completed, the entire plant will occupy about two and a-half acres.

Naturally, steel office equipment of the most modern design is used throughout the offices and is of Royal Metal design.

Bean Starts Aluminum Foundry

A new aluminum precision molding foundry that consolidates activities carried on at two different locations was put into operation by Morris Bean & Co., Yellow Springs, O. Designed and constructed by H. K. Ferguson Co., industrial engineer and builder, at a cost of $600,000, the new foundry building has over 60,000 square feet of floor space. It makes aluminum precision castings for the aircraft industry. The foundry utilizes the Antioch Process, developed by Morris Bean, president of the concern.

Baltimore Land for Westinghouse

Westinghouse Electric Corp. opened negotiations for a tract of land near the Baltimore Friendship Airport for a new plant to meet the expanding military demands for products of the company's Electronics and X-Ray Division. The land will be needed for a new plant that will have a manufacturing area of about 400,000 square feet and that will employ about 2000 people in normal times. The company would like as much as 100 acres.

The division operates two plants in Baltimore now and employs about 2000. In World War II it manufactured over $400 million worth of electronics equipment for the military including the radar that revealed the Japanese attack on Pearl Harbor.

Free Grinding Advice Offered

Daffin Mfg. Co., Lancaster, Pa., established a new research section that will provide free service to industry in solving grinding and reduction problems. Samples of materials to be ground may be submitted and grinding tests will be conducted and engineering reports with samples of the actual test will be returned to the company for whom the research was conducted. Daffin, a division of Lancaster Engineering Corp., produces a complete line of grinding and pulverizing equipment.

Nesco Forms New Division

Formation of a new division to manufacture and sell a line of commercial frit, the raw material for making porcelain enamel, is announced by William Howlett, executive vice president of Nesco Inc. He says the firm will produce and nationally merchandise the product from its Granite City, Ill., plant and will make available to industry a research and development service to find new uses and markets made from the compound. Nesco will also replace its

previously unprofitable enamel cooking-ware business with a new line of enameled specialties.

Nesco will use its enamel facilities for its line of electrical appliances, including new electric roasters. Mr. Howlett explains that capacity at the plant is large enough to accommodate a sizable commercial operation besides producing frit for regular company uses.

A two-year repair and rehabilitation program for the plant will involve $250,000 worth of work. Plans call for new plumbing, a new cafeteria, new locker rooms and other improvements.

Swedlow in Youngstown

Swedlow Plastics Co., Los Angeles, will establish a Youngstown plant that will eventually employ about 300. The firm leased the old Great Lakes Carbon Corp.'s rock wool plant and is moving in. It plans to start operating within 60 days. Swedlow operates a plastics plant in Los Angeles that serves West Coast aircraft companies. The Youngstown plant will serve eastern aircraft producers and television manufacturers as well as other plastics users.

Pole Line Warehouse Opened

Oliver Iron & Steel Corp., Pittsburgh, opened a new Pole Line Material Division branch warehouse in Dallas. B. W. Johnson, general sales manager of the division says the new warehouse will facilitate delivery of pole line materials throughout the entire Southwest.

Pacific Fittings Affiliated

Pacific Fittings Inc., San Francisco, producer of pipe fittings nipples and pipe couplings, is now the Pacific Fittings Division of General Metals Corp., Oakland, Calif. Affiliation of the two companies will mean the production of a more complete line of plumbing, hardware and industrial items. Pacific Fittings will continue to retain its own identity in serving the western trade. It was organized in 1928 as the Pacific Nipple Co.

Luntz Gets Sintering Plant

Luntz Iron & Steel Co., big Ohio scrap concern, acquired the American Sintering Co.'s old plant at Hubbard, O. It is being converted into a scrap processing plant and work of cutting up old steam locomotives, railroad cars and other rail and industrial scrap has started. The yard employs 25 and expects eventually to employ about 100.

American Sintering operated the plant for several years, producing sinter from flue dust for a number of Youngstown district blast furnaces. It was abandoned a few years ago when some Youngstown steel companies put in their own sintering plants.

Profits Slip Slightly

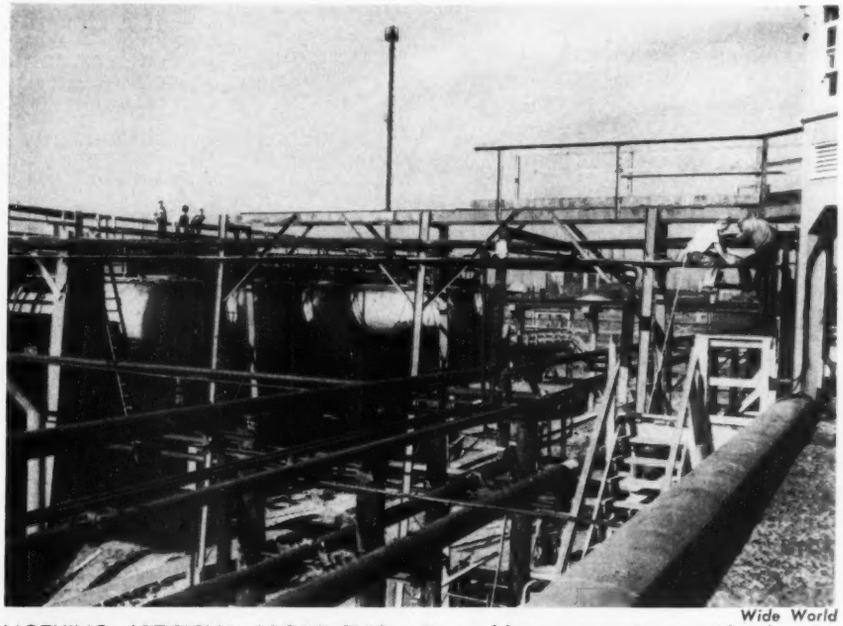
The income dollar of 49 industrial companies in the Mahoning and Shenango valleys of Ohio and Pennsylvania yielded an average profit of 7.3 cents in 1949, according to the third annual profit survey released by Industrial Information Institute Inc. That compared with 7.2 cents in 1947 and 7.4 cents in 1948.

Each year the institute, which serves business and industry in Trumbull, Mahoning and Columbiana counties of Ohio and Mercer county of Pennsylvania, asks its members to provide a complete set of figures on their individual operations. The figures are translated into a composite income total and distribution of a typical income dollar. The member companies allotted 48.1 cents for materials and supplies for each dollar of income in 1949, 7.7 for taxes, 3.1 for depreciation, 0.2 for interest, 33.6 for wages and salaries and 7.3 for profit. The profit figure was further divided. An average of 3.6 cents went back into business and 3.7 cents went as stockholder dividends.

Hagan Readies in Record Time

Two months after a site was selected, a new building for Hagan Corp., combustion and chemical engineering firm, was put into operation at Orrville, O. The speedy job involved erecting and equipping a 6600-square foot building of brick, glass and steel and the training of key personnel for a new line of work. How did it all come about? Work on the building was started after Burrell Corp., Pittsburgh laboratory supply house, asked to be relieved of the job of preparing the special reagents and supplying special laboratory equipment for boiler water testing done by the clients of Hall Laboratories Inc., a subsidiary of Hagan.

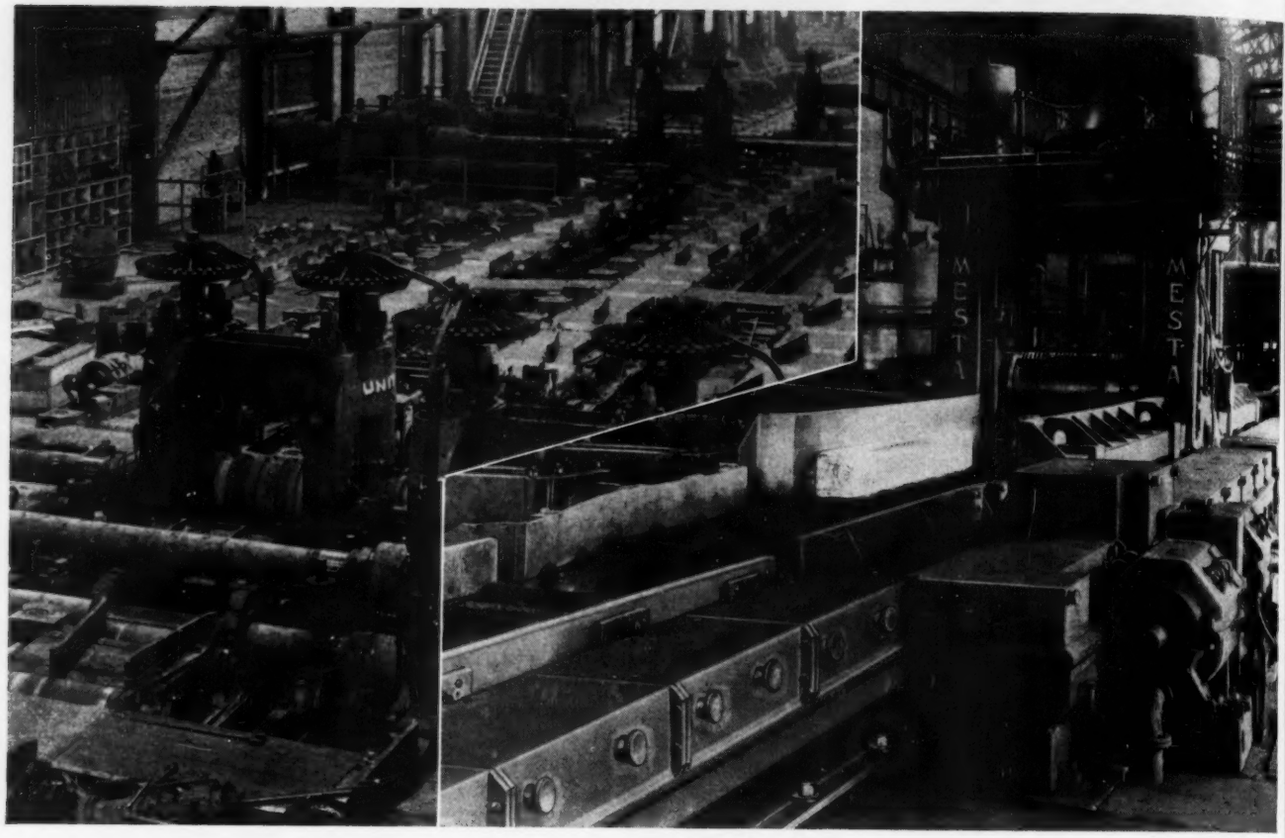
Two days after only half the concrete floor had been poured, carpenters were erecting shelving and two days after that the first of four large trailer trucks arrived from Pittsburgh with equipment and supplies. As carpenters, plumbers, electricians, roofers, bricklayers and glaziers put the finishing touches on the building, executives from the Pittsburgh office donned work clothes and joined division personnel in getting everything ready. By the morning of the deadline day the division was in full operation in the new building; it had 350 to 400 different items in stock and more than 100 orders already packaged and waiting for pick up.

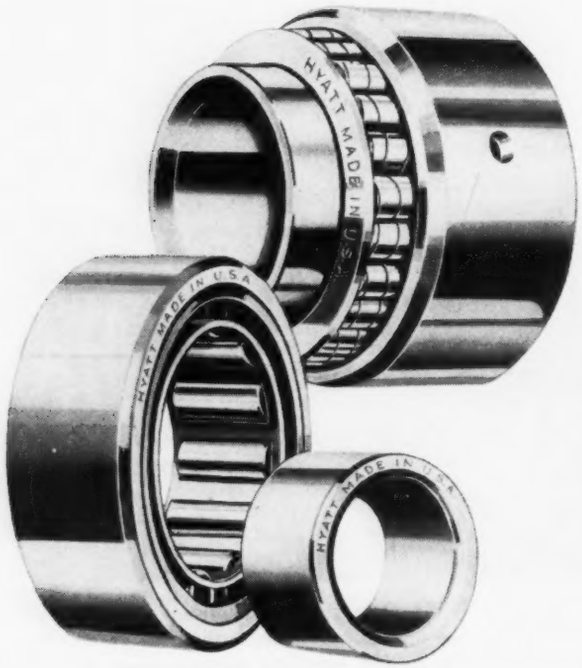


Wide World

NOTHING ARTIFICIAL ABOUT THIS: Ten rubber companies outside the tire division of the industry jointly set up a new corporation to reactivate and operate the government-owned $7 million synthetic rubber plant in Louisville. The plant has a rated capacity of 30,000 tons annually of butadiene-styrene type and is scheduled to begin operations Jan. 1. It is the second synthetic plant ordered out of mothballs since the Korean war. Here, workmen repair and clean the tanks and pipes in the tank farm section of the plant. Tanks on the left store butadiene as it is received from a nearby supply plant. Pipes carry butadiene to the reactors where it becomes synthetic rubber

HYATTS RATE HIGH—AT MIDLAND





MORE than 20 years ago Hyatt Roller Bearings were installed on the feed rollers, table rollers, lineshafts and drives of a 40″ Blooming Mill at Midland. Since then many more Hyatts have gone into service on Midland's cranes, ingot mold cars, charging box cars, motors and other mill tables.

Thus from this original installation, and the similarly successful Hyatt applications which followed, Crucible Steel has profited by satisfactory bearing performance for almost a generation.

No wonder they, like the steel industry as a whole, continue to specify Hyatts for new equipment and use them so extensively for changeovers. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

HYATT ROLLER BEARINGS

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Manufacturers say they are going to get along with the plating material they have or any that they can get. The public wants chromium; so do the stylists

DETROIT

PLATING continues to be the No. 1 headache among all car manufacturers and they see no hope of any improvement in the situation. Nickel has long been in short supply because of feverish government stockpiling and there is no reversal of the trend in sight. Some specifications already have been cut in half, despite the fact this seriously detracts from corrosion protection. Consideration is being given to replacing nickel with copper but prospects now point to copper allocations being slashed further, so it probably will be as short as nickel. And there is little technical support for the contention that copper can be an effective substitute on exterior plated parts. The switch was made during the last war and the result was inferior protection of the parts involved.

Everybody Wants Chromium—You talk to a manufacturer about the problem and he tells you he is just going to get along with the plating material he has or can acquire by hook or crook, and after that who knows? Certainly the new models are showing no restraint in the use of chromium plate. There is more rather than less. The public wants it, the stylists want it, so there you are.

One stunt used by Ford on new cars and trucks is to limit the amount of plating on radiator grille elements and substitute aluminum paint, or "argent" as it is called. This type of finish, while it has nowhere near the luster of chrome, is effective where properly applied and has unusual highlighting effect.

"Shotgun" Objection — Walter Reuther, UAW-CIO president, urges forthcoming copper and aluminum regulations be co-ordinated with all other steps that can be taken to assure maximum availability of the scarce materials and to gear increased production for defense closely into the reduction of civilian production. He objects to the issuance of "shotgun" orders cutting back critical materials and unrelated to an overall plan. He believes that restrictions on the use of copper and aluminum should be accompanied at the outset by government action to step up production of these materials promptly and to the fullest extent required. Such measures would include a program to expand aluminum capacity: To put unused capacity to work, to recruit larger labor forces in copper mining, to construct reduction facilities near the mining operation, to have the government purchase copper and aluminum from other countries.

Above all, the program would appeal to Congress to eliminate the tariff on imported copper or to institute pre-emptive buying by the government of all copper available from foreign sources so that this may be made available to the stockpile or to industry at a duty-free valuation.

The Great Beyond — Beyond that, Reuther would have the government impose price ceilings on these scarce metals. He reasons that a roll-back of the price of copper and aluminum would discourage undue accumulations and would cause hoarders to disgorge supplies that might escape detection in the enforcement of inventory control orders. Finally, he urges reconsideration of the proposal to restrict copper and aluminum use by a flat percentage cut for all consuming industries since he feels that a restriction of this type does not deal equitably between essential and nonessential uses. Also, a flat percentage cut is difficult to enforce, and the acquisiton of "black market" supplies in violation of the proposed regulation will further stimulate price inflation.

Wide World

JACK-IN-THE-BUMPER: This German motorist is testing the new jack-in-bumper that was developed by a Berlin inventor, Max Guhse. In each of the four bumper guards is a jack that operates from a hand crank. If necessary, all four wheels can be raised

Ford Curtails Production

Serious curtailment of production at Ford has been the direct result of a slowdown in the company's rolling mill. For the past six weeks the daily production rate at the mill has been far below the average of the first nine months of the year and has already caused a reduction of automotive schedules to the extent of approximately 60,000 units. The slowdown has been particularly troublesome in the cold mill and present estimates are that about 14,000 in the company's various plants will be laid off for an indefinite period because of the steel deficiency. Reason for the slowdown is not explained by the company but union sources believe it springs from objections over work schedules and overtime policies.

Lifesaver—Ford has made the effort to adjust its steel mill schedules to conform with the practice of other steel plants, since they are seven-day operations and cannot be expected to justify overtime pay on the same basis as automotive production.

Ford's steel mill has been a lifesaver in recent years since the capacity has been available for the company's own requirements and also for filling in venders who may be suddenly caught short of special sizes or types of steel.

The Visible Changes in Lincoln

Most visible changes in the 1951 Lincoln are new rear quarter panels and fenders, new rear bumpers, new tail-light assembly, new roof panel to accommodate the 29 per cent larger rear window, new front bumpers and grille, and repositioning of headlamps nearer the outside edge of the fenders. Interior modifications include new trim details, new hard-

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ware, new package tray, restyled steering wheel and instrument panel control knobs. Engine horsepower has been increased from 152 to 154 and better balance of the engine assembly has been achieved by the use of a mass balancing machine in manufacturing.

Cost to the Fourth Decimal

The auto industry has long been known for having some of the sharpest cost experts in any manufacturing business and their proficiency becomes increasingly important in the effort to hold retail prices in the face of higher quotations on practically all materials and parts, to say nothing of labor rates. Cost figures are carried to four decimal places on everything. The reason for this is that in running a total on a list of parts the effect of the third and fourth figures becomes more important, and would be lost if each individual amount were restricted to, say, two decimal points. This sounds like a triviality, but it is actually a serious matter, and reflects the intense scrutiny given all costs.

Machine to Displace Acid

A shotblasting machine which has cut by 90 per cent the amount of sulphuric acid used to pickle forgings has drastically reduced pollution of the Flint river at the Buick plant. The machine, installed in the drop forge plant, is used to clean small forgings and a counterpart is on order for handling larger forgings. It is expected that by 1953 the use of sulphuric acid in this work will be discontinued entirely.

K-F's Ohio Plant Ready in May

Kaiser-Frazer's $3 million stamping plant at Shadyside, O., will go into production by next May and will have initial capacity of 3000 tons of finished stampings per month and facilities for expansion to 5000 tons as required. The investment breaks down into $1.3 million for presses and machinery, and $1.7 million in construction, cranes, shipping facilities and equipment installation. The plant will have 13 large presses ranging from 300 to 750-ton capacity, two 108-inch blanking presses, six 75-ton presses, two 25-ton cranes, one 15-ton crane, roller levelers, shears, and miscellaneous auxiliary equipment. Stampings to be produced will include rear floor pans, outer wheel housings, dash panels, rear seat shelf panels, stone shields, body side sills and splash shields.

Auto Dealers Cry "Uncle"

The nation's automobile dealers are saying "Uncle" about the impact of Regulation W's stringent terms on car sales. Last week one of Uncle Sam's legislators thought the dealers might have a point. Senator Frear of Delaware, member of the banking committee which provided the authority for the Federal Reserve Board to impose the credit restrictions, said the "terms seem a little too drastic when cars are being produced at the rate they are at present."

Obviously the present pace will not be maintained for too much longer.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	842,304	678,092
September	760,808	657,073
October	805,000*	601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
Oct. 28	188,200	141,725
Nov. 4	177,096	116,699
Nov. 11	161,113	114,856
Nov. 18	160,000	115,152

Estimates by Ward's Automotive Reports

* Preliminary.

NPA, through its metals curtailment orders, will see to that.

Lame Ducks & Watch Dogs—Public hearings on the disturbance caused by Amendment 1 to Regulation W are planned for next week in Washington, after the lame duckers go back to work. Senator Maybank, who will chairman the watch dog committee to oversee operation of the law that gave FRB its power, is organizing its work and setting up schedules for the hearings. Statisticians of National Automobile Dealers Association are at work compiling results of a survey taken among its members to support the contention that they ought to have prompt relief from the onerous measure.

Reports from many directions indicate that organized groups are painting the picture blacker than is actually the case. Where new car sales have dropped precipitously the answer quite often is new models are only a few weeks away, and many dealers of lowest priced cars have stacks of orders to show that for a while at least demand will be good, tough credit terms notwithstanding. But dealers admit some of the orders may cancel out when the cold realities of price hit prospective purchasers.

Bonanza in Jalopies—The used car situation is a different story, but it must be remembered that approaching winter has never encouraged used car business. In one aspect the restriction has been a godsend: Prewar models are in demand; some dealers in fact would rather take the oldsters in trade than they would postwar jobs. Regulation W is causing downgrading of prospective buyers' tastes which is proving a bonanza to specialists in low cost transportation.

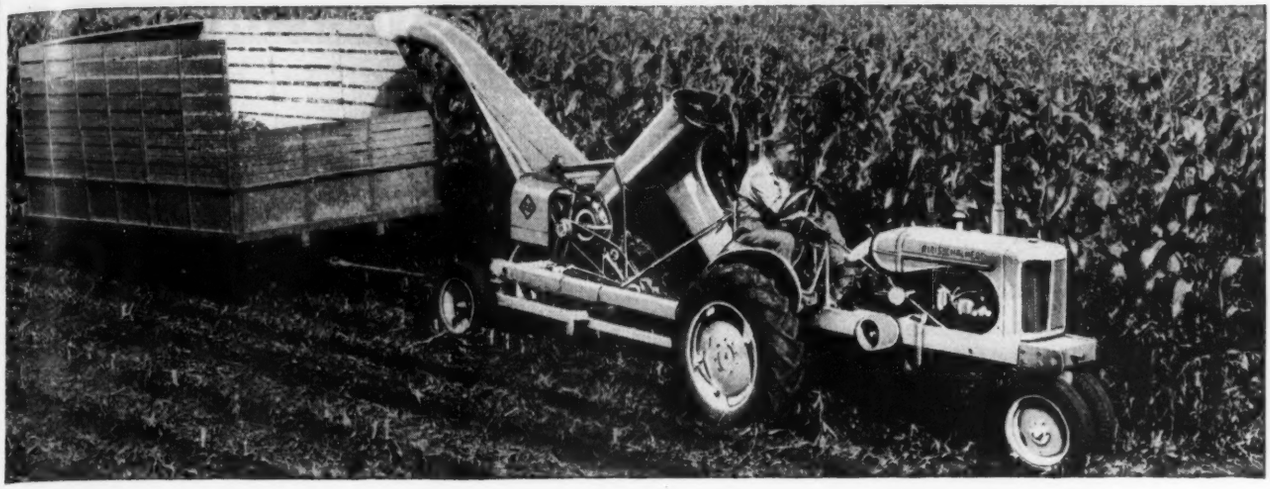
Along the Motor City's Livernois avenue, an ingenious plan, patterned after the "multiple-listing" system of real estate agents, is being applied to used cars. Dealers participating in the plan exchange lists of their used cars so each can sell on a moment's notice the particular year and model the customer wants. A small commission attaches to the sale.

GM Cancels Show

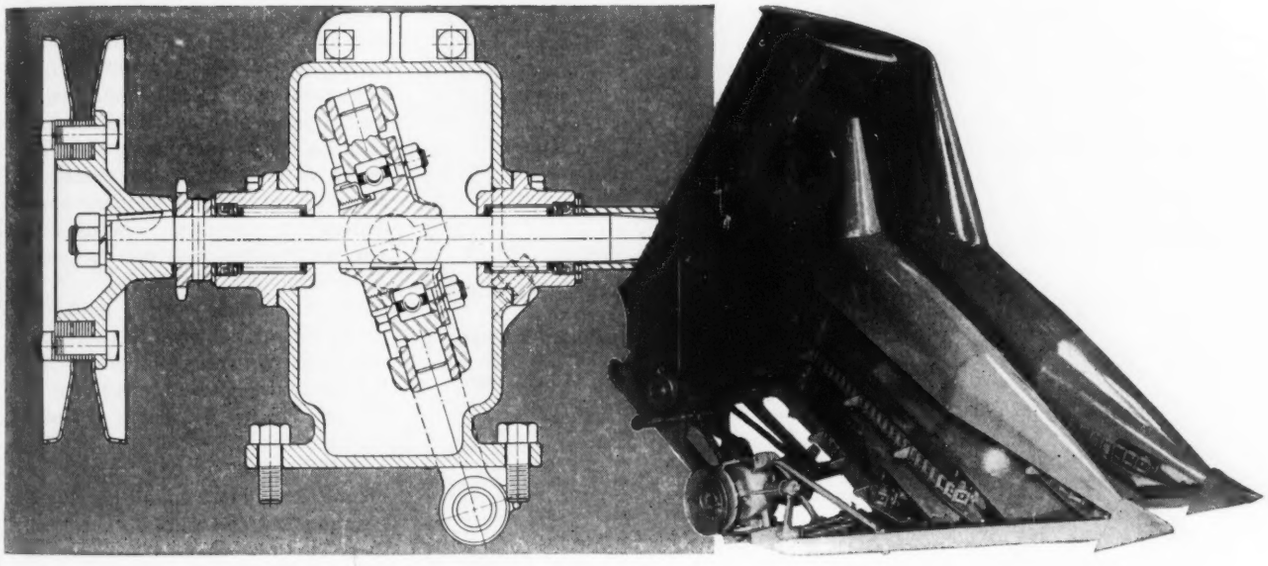
Decision by General Motors to call off its scheduled third annual automotive extravaganza in New York next January had to be made in a hurry—not because of the immediate international situation and defense planning but because long weeks of planning and building are required to work out unusual display effects to startle visitors to the Waldorf-Astoria affair and to complete arrangements for the many events held concurrently. Scale models of the exhibit rooms—complete to the last strip of bunting—were built for the past two shows and then turned over to crews of carpenters, mechanics and decorators who proceeded to construct and test the full-scale elements. It has been estimated that GM spent close to $1 million to stage the event in the last two years.

The Younger Auto Execs

Reference to L. L. Colbert, new Chrysler president, as the youngest top executive in the auto industry, made in these pages last week, was inaccurate. Both Henry Ford and Edgar F. Kaiser have him beat on this score.



Double Action Bearing



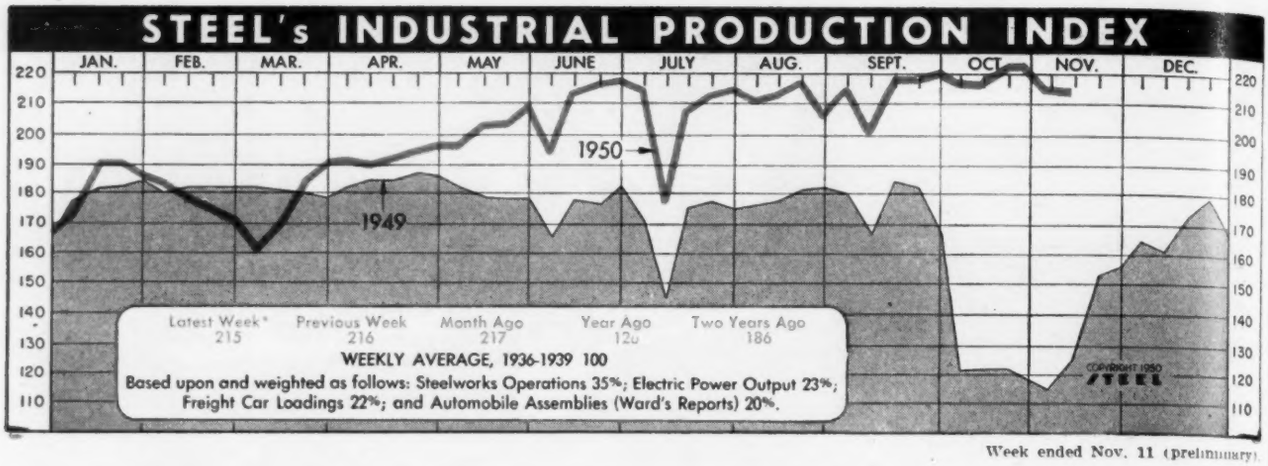
TRANSLATING rotary motion into reciprocating motion for the sickle drive on the row-crop attachment for the Allis-Chalmers Forage Harvester is not a job for a bearing that can't put up with variety in its life—a daily round of dizzy motions and alternating loads.

One compact New Department single row ball bearing does the job because taking thrust in both directions as well as radial load is fundamental to its design. Without need for adjustments, this bearing uniquely combines the required internal rigidity with utmost freedom of rotation, and here it is fully enclosed against dirt—needs minimum attention for lubrication.

Nothing Rolls Like a Ball

NEW DEPARTURE BALL BEARINGS

NEW DEPARTURE · DIVISION OF GENERAL MOTORS · BRISTOL, CONNECTICUT 117-C


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1950
1949
Latest Week* 215
Previous Week 216
Month Ago 217
Year Ago 120
Two Years Ago 186
WEEKLY AVERAGE, 1936-1939 100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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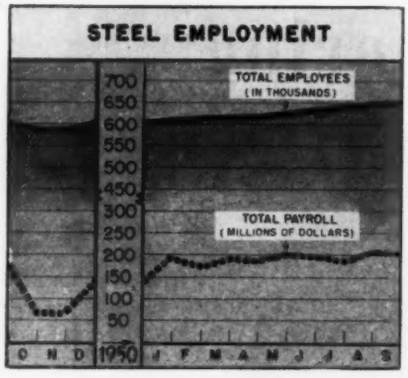
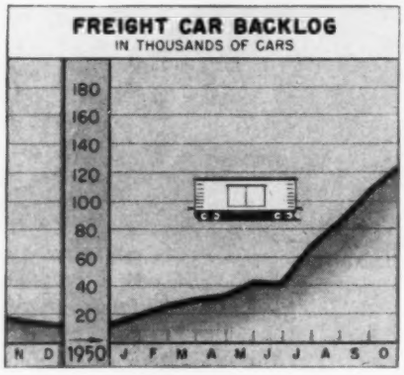
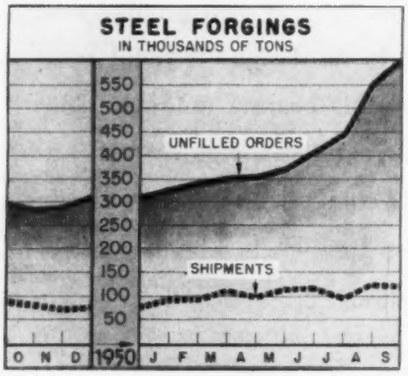
Week ended Nov. 11 (preliminary).


STEEL EMPLOYMENT
TOTAL EMPLOYEES (IN THOUSANDS)
TOTAL PAYROLL (MILLIONS OF DOLLARS)
700 650 600 550 500 450 300 250 200 150 100 50
O N D 1950 J F M A M J J A S




STEEL FORGINGS
IN THOUSANDS OF TONS
550 500 450 400 350 300 250 200 150 100 50
UNFILLED ORDERS
SHIPMENTS
O N D 1950 J F M A M J J A S

Charts—Copyright 1950, STEEL

Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1950	1949	1950	1949
Jan.	609	650	$189.3	$202.1
Feb.	613	653	174.7	189.8
Mar.	616	652	190.0	207.2
Apr.	621	647	186.2	191.9
May	628	637	199.9	188.4
June	636	625	195.3	181.8
July	643	610	188.7	160.3
Aug.	649	603	206.6	175.6
Sept.	650	600	203.8	173.5
*Oct.	...	584	....	63.1
*Nov.	...	584	....	63.1
Dec.	...	602	....	136.9

Monthly average. * Averages taken from single figure for the two strike affected months. American Iron & Steel Institute.

Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,366	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	199	30,539	73,188
Apr.	3,308	30	32,857	52,569
May	11,636	589	42,300	52,281
June	2,095	153	40,585	42,813
July	30,065	408	67,084	36,564
Aug.	24,255	185	86,156	28,731
Sept.	25,611	123	106,611	22,203
Oct.	21,893	201	122,488	17,377
Nov.	....	1,145	.....	14,146
Dec.	....	1,220	.....	12,036
Total	....	6,248		*End of month

American Railway Car Institute

Steel Forgings

Thousands of Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	93	124	327	571
Feb.	93	111	341	540
Mar.	109	120	350	503
Apr.	99	104	357	465
May	114	92	373	412
June	117	101	408	377
July	95	70	446	348
Aug.	124	96	548	312
Sept.	122	88	620	294
Oct.	...	81	...	280
Nov.	...	73	...	287
Dec.	...	78	..	308

* For Sale. Bureau of the Census.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction Oct.23	Ironers Nov.13	Ranges, Gas Nov.13
Durable Goods Nov.6	Machine Tools Oct.30	Refrigerators Oct.23
Employ., Metalwkg..Oct.23	Malleable Iron Oct.30	Steel Shipments Oct.30
Fab. Struc. Steel...Nov.6	Price Indexes Nov.6	Trucks, Elec. Ind. ..Jan.2
Fdry. Equip. Orders.Nov.6	Pump Orders Nov.13	Vacuum Cleaners ..Nov.6
Gear Sales Nov.13	Purchasing Power ..Oct.2	Wages, Metalwkg. ..Oct.23
Gray Iron Oct.30	Radio, TV Aug.14	Washers Nov.13
Indus. Produc. Nov.6	Ranges, Elec. Oct.30	Water Heaters Nov.13

Steel Hourly Earnings at Peak

Average hourly payments to wage earners in the iron and steel industry in September registered a new high for any month, at $1.757, American Iron & Steel Institute reports. This compares with $1.717 in August and $1.712 in September, 1949. In nine months the average was $1.72 compared with $1.695 in the corresponding part of 1949. Company contributions to pension, insurance and similar benefits are not included in these figures.

Wage earners worked an average of 39.4 hours a week in September, bringing the average for nine months to 38.7 hours a week, compared with an average of 37.6 hours a week in nine months of 1949.

Total payroll of the industry was estimated at more than $1.7 billion in nine months, the highest ever reached in a similar period and $64 million higher than in the like period a year ago. The September payroll was $203,783,000, compared with $173,450,000 a year earlier. Total estimated employment by iron and steel companies in September at 649,500 showed an increase of more than 49,000 in a year.

Rapid Rise in Forgings Backlog

Commercial forgings backlogs increased 73,000 tons during September and totaled 620,000 tons at the end of the month. Unfilled orders at the end of the reporting period were more than double those on the books a year earlier, Census Bureau says.

On an average working day basis, September shipments were 14 per cent above August and 45 per cent above September, 1949. The unadjusted total for September was down slightly to 122,408 tons from 123,608 tons a month earlier. In September, 1949, shipments were down to 88,417 tons.

The Business Trend

Controls won't be much different as the result of the elections but excess profits taxes may not take as big a gouge as administration originally planned

ELECTION results are all in and business men are wondering what effects the changes will mean to their industries. The answer is: Not much. Priorities, allocations and defense orders are not going to be changed because of the shift in political sentiment. The external influences that make them necessary are still present and in many respects are more ominous than they were a few weeks ago. Taxes imposed on industry may not be as severe as was indicated earlier. This is primarily true of the excess profits tax which faces mounting opposition. An interesting development in this area is the formation of a group to fight the excess profits tax with several prominent New Deal economists in the lead.

Some dislocations in production are resulting from the shift to a part wartime economy and others appear near at hand. Some firms who borrowed from future stocks to keep up with high demand are finding big holes in their inventories and their output faces day-to-day stoppages.

Industrial output reached a new postwar high in October, the Federal Reserve Board estimates. Its index climbed to 212 per cent of the 1935-1939 average from 211 in September. Higher output of steel, durable goods and military equipment contributed to the rise.

In the week ended Nov. 11 STEEL's industrial production index eased 1 point further to a preliminary 215 per cent of the 1936-1939 average. A drop in passenger car and truck output wasn't fully made up by a higher steelmaking rate, the other index components held steady. The latest index is two points below the total for one month earlier but is 89 points higher than in the like week a year ago when the steel strike was in the process of being settled.

Steel's Pace Unchanged . . .

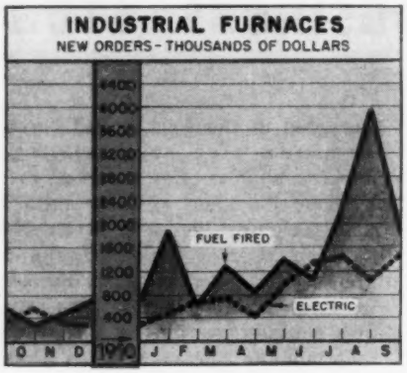
Although steelmaking operations last week were estimated to be off fractionally from the alltime high recorded in the week ended Nov. 11, it doesn't mean any slackening in steel companies efforts to meet mountainous demands. Small shifts are necessary from week to week as the steel companies have to take furnaces off the line to effect necessary repairs. In many cases these repairs are actually overdue as furnaces are kept on the line as long as possible in order to keep output at a peak.

Incomes Get Bigger . . .

Sharply higher dividend payments by corporations and expanded government payrolls under the defense program pushed the total incomes of individuals to a new record in September. Commerce Department reports that personal income jumped to a new high annual rate of $228.3 billion in September, about $2.9 billion above the August rate. Corporate dividends figured on an annual basis increased by $3 billion to $21.4 billion. Wage and salary receipts rose by $2 billion on the strength of bigger government payrolls and came to $147.5 billion on an annual basis. Higher hourly earnings pushed wages in manufacturing plants up $400 million. Partly offsetting the increase

BAROMETERS of BUSINESS

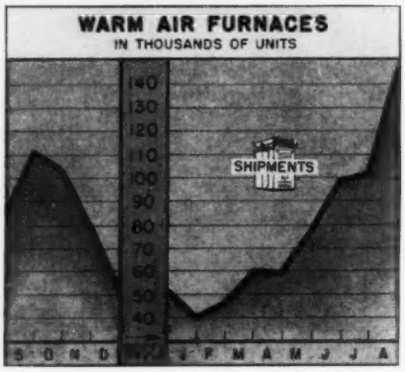
		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	103.0	98.5	101.5	24.0
	Electric Power Distributed (million kilowatt hours)	6,574	6,551	6,509	5,435
	Bituminous Coal Production (daily av.—1000 tons)	1,896	1,935	1,902	457
	Petroleum Production (daily av.—1000 bbl)	5,910	5,896	5,862	5,185
	Construction Volume (ENR—Unit $1,000,000)	$101.9	$199.7	$156.7	$111.3
	Automobile and Truck Output (Ward's—number units)	161,113	177,096	174,234	114,856
	*Dates on request. †1950 weekly capacity is 1,928,721 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	860†	862	889	636
	Business Failures (Dun & Bradstreet, number)	135	181	188	222
	Money in Circulation (in millions of dollars)‡	$27,388	$27,219	$27,339	$27,528
	Department Store Sales (changes from like wk. a yr. ago)‡	none	+5%	+9%	−2%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$13,276	$16,292	$14,889	$11,234
	Federal Gross Debt (billions)	$256.7	$256.8	$256.5	$256.8
	Bond Volume, NYSE (millions)	$16.0	$17.6	$15.6	$12.2
	Stocks Sales, NYSE (thousands of shares)	7,827	9,223	9,259	4,317
	Loans and Investments (billions)†	$69.2	$69.2	$68.7	$66.7
	United States Gov't. Obligations Held (millions)†	$33,555	$33,729	$33,694	$37,388
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	157.76	157.76	157.29	152.52
	STEEL's Nonferrous Metal Price Index‡	244.9	236.9	225.5	170.6
	All Commodities†	170.0	169.6	168.4	151.6
	Metals and Metal Products†	180.6	179.7	177.5	167.4
	†Bureau of Labor Statistics Index. 1926=100. ‡1936-1939=100. ††1935-1939=100.				



Industrial Furnaces
New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,299	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	1,047	1,978	1,328	196
July	2,247	594	1,445	329
Aug.	3,927	706	1,039	589
Sept.	1,817	589	1,485	318
Oct.	....	269	....	565
Nov.	....	464	....	293
Dec.	....	718	....	281

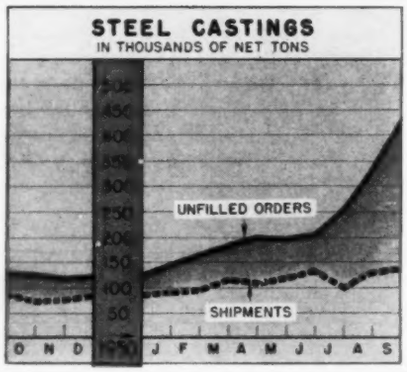
* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Warm Air Furnaces
Shipments in Units

	1950	1949	1948
Jan.	39,887	31,855	46,558
Feb.	45,618	33,125	36,345
Mar.	59,982	41,376	39,297
Apr.	58,798	34,595	45,597
May	78,349	42,427	55,473
June	98,517	55,857	64,724
July	102,189	48,551	57,292
Aug.	146,653	84,250	92,011
Sept.	.....	111,582	103,566
Oct.	.....	102,989	107,024
Nov.	.....	78,828	77,498
Dec.	.....	51,766	51,163

Bureau of the Census



Steel Castings
In Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1950	1949	1950	1949
Jan.	88.8	140.6	142.5	338.9
Feb.	91.8	135.0	165.2	320.2
Mar.	111.8	138.9	185.6	284.8
Apr.	107.0	120.0	201.6	250.5
May	117.9	106.2	198.0	191.5
June	131.1	116.1	206.8	173.2
July	98.3	78.7	255.4	155.5
Aug.	128.4	90.0	329.9	143.6
Sept.	134.6	86.5	428.0	127.7
Oct.	....	70.7	....	124.8
Nov.	....	76.4	....	117.9
Dec.	....	84.5	....	122.9

* For sale. Bureau of the Census

Charts—Copyright, 1950, STEEL

in dividends and wages was a decline in earnings of farmers, landlords and unincorporated businesses.

Auto Assemblies Drop . . .

Passenger car and truck outturn in the week ended Nov. 11 fell to the lowest level for a five day week since the Chrysler strike ended. The week's total of 161,113 passenger cars and trucks resulted from Ford assemblies being halted for model changeovers. Most producers are struggling to keep assembly lines operating a full week and any action that cuts off the flow of parts quickly cripples operations.

Prices Rise Further . . .

Wholesale prices which rose sharply after the start of the Korean war and then fell off slightly capped their recent rise in the week ended Nov. 7 as they reached 170 per cent of the 1926 average. This is the Bureau of Labor Statistics index highest point since the war began and is only 0.2 per cent below the postwar high. STEEL's nonferrous price index reached 244.9 per cent of the 1936-39 average in the week ended Nov. 11. Tin prices which broke toward the end of the week were the major factor in pushing the index to an alltime high.

Larger Inventories . . .

Business inventories at the end of September were estimated at $56 billion by the U. S. Office of Business Economics. After adjustment for seasonal variations, book value of inventories was up $1.8 billion over August. Manufacturers' stocks increased by $1 billion.

Construction To Drop 19%

Decline in 1951 will be from record levels. Year's totals will still be high

CONSTRUCTION in 1951 will be down 19 per cent from 1950 totals, say Thomas S. Holden, president, and Clyde Shute, assistant vice president, F. W. Dodge Corp. Their estimate, based on states east of the Rocky mountains, contemplates a 35 per cent drop in residential building and a 10 per cent decline in nonresidential building. Heavy engineering is expected to be maintained at the same level as this year.

Moderate extent of the decline is based on expectations that Regulation X, imposed in October, will be modified during 1951. Government officials' intention was to cut housing volume back one-third from this year's expected 1.3 million houses. Messrs. Holden and Shute believe this regulation will prove too severe and unless modified the housing cutback will be considerably larger.

Booster Shot—The federal government's steps to reinvigorate the waning postwar housing boom in mid-1949, plus further credit easing in the spring of this year, added to a free spending mood of the public and combined to bring about a housing boom that surpassed all records and all expectations. Since then the armament industry has superseded construcion as the favored program.

Growth momentum and the prospective expansion of the American economy are so great that a continuously large construction demand may be expected without artificial government stimulation, they believe. Present prospect is that controls will be imposed on a more or less experimental basis.

Plenty Left — The estimated cutback from the peak construction volume of all time still leaves a dollar total second only to 1950 and a physical volume that compares favorably with other prosperous construction years. Level of construction costs will be about the same as this year. Some materials will be tight, others that were tight this year will be plentiful and be competitively priced. Demand for construction labor will ease, though many men who were employed in construction this year will shift to defense production.

Automatic Transmissions Help

Record earnings in the first nine months are reported by Borg-Warner Corp., Chicago, due to an increased

demand for all its highly diversified products, mainly in the automotive, farm implement, household appliance and aviation fields. Earnings amounted to $23,715,259 on sales of $243.7 million, compared with earnings of $15,132,483 on sales of $212,397,930 in the corresponding period a year ago.

Roy C. Ingersoll, president, points out that since two Borg-Warner automatic transmissions were introduced this year on Studebaker and Mercury cars the demand for these devices has greatly increased the original estimate of requirements. A third automatic transmission on Fords will be introduced soon. Production on these transmissions is progressing at an accelerated rate and demand for the company's overdrives also continues strong.

Norge Division, had a record third quarter in its appliance sales and was a major contributor to higher sales volume for the entire company.

Scott Radio Sales Boom

John S. Meck, president, Scott Laboratories Inc., Chicago, reports sales in the first four months of the current fiscal year were 8½ times those in the same 1949 period. Sales in the June-September period totaled $928,276, compared with $110,221 last year. Net earnings were $84,903 and represented a major improvement over the $60,653 loss in 1949. Sales in the period reported this year are already one and a half times as large as in all the preceding fiscal year.

Approval of the CBS color television system is having little effect on demand for Scott receivers, Mr. Meck says. Demand for TV sets and radiophonographs continues to exceed production capacity. Some difficulty is being experienced in getting a steady flow of some materials but the company reports it is able to maintain a good balance between production and orders.

Deliveries Increase Slowly

Freight car deliveries are increasing slowly but backlogs are skyrocketing. The buildup to the 10,000 car a month total by January sought by NPA has a long way to go since October deliveries totaled 5501 cars, less than 400 cars above the preceding month's deliveries. A spokesman for the Association of American Railroads said it may take until April for the carbuilders to reach the 10,000 car goal. The current production pace is estimated at about 6000 cars per month. On Nov. 1 the backlog totaled 122,488 cars, the highest level attained since June, 1948.

Scalemakers Hustle To Meet Demand

SHIFTS in production but no curtailment are expected by scale manufacturers either in a defense economy or an allout war. They expect that their experience in World War II when the industry increased its output rather than cut it down during the war will again be repeated if the international situation worsens.

This year the industry's output will be considerably improved over 1949 with order volume swinging up around Apr. 15 and staying high since that date. Total shipments will attain a higher dollar volume than either last year or 1947 when the industry had a substantial backlog (see chart).

No Giants — About 65 companies are engaged in making weighing devices and the bulk of these are small firms. Only 15 companies employ more than 100 persons in their plants and only one falls into the Census Bureau's classification of over 2500 employees. In the census year of 1947 total employment for the industry was 6526. It is down a little now but companies are trying to enlarge work forces.

Skilled mechanics required by scalemakers are hard to get as are engineers. Some scalemakers think they may have to discourage customers from ordering custom-built scales because their engineering departments cannot get enough manpower to handle all the job requests. Plants are working one shift and some firms say they are having trouble in keeping one shift fully staffed.

Conditions May Improve — Scalemakers are faced with metals shortages as are most companies and few have adequate inventories or are assured of enough materials to keep going at the current rate. If consumer industries are ordered to cut production, scale manufacturers may find the supply situation a little easier. Limitation orders during World War II did not limit production but restricted the number of models built.

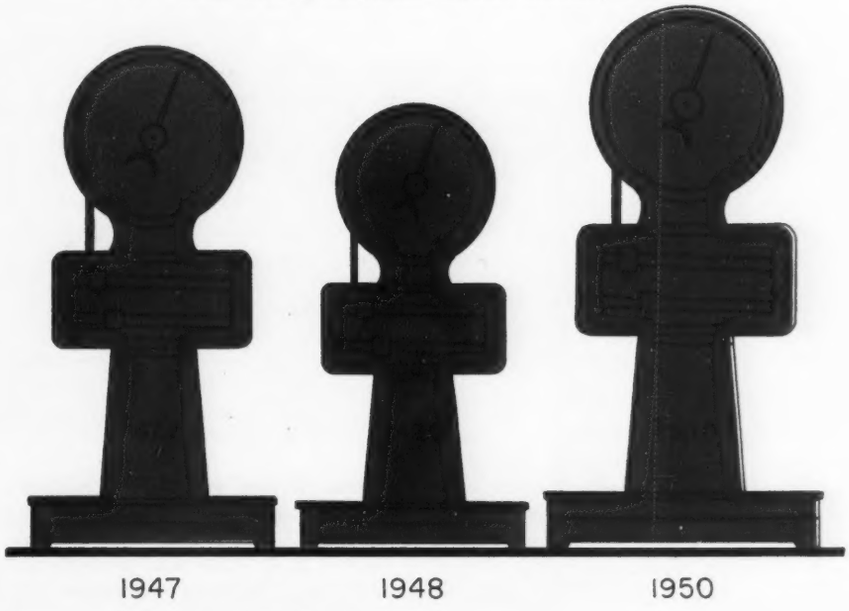
Many smaller types of industrial scales are still stocked at outlets for over-the-counter sale. Stocks are fair. For items not in stock shortest delivery promise would be about six weeks. Some items take as long as 20 weeks.

Uses Grow—Emphasis on cost-cutting throughout industry is helping scalemakers' sales. George C. Worthley, scale division manager, Fairbanks, Morse & Co., says plant layout engineers are giving increasing attention to scales in materials handling systems. They are incorporated to eliminate waste motion and increasingly to eliminate piece work counting and inventory tallying. Scales are gaining popularity in quality control too.

Printing scales to give permanent records and eliminate the human error are gaining favor constantly. M. E. Holmes, Toledo Scale executive, says many firms who used scales only in weighing outgoing or incoming shipments find it pays to use top quality scales for interdepartmental use.

Bigger Shipments for Weighing Devices

. . . cost-cutting emphasis boosts industry's volume



Figures in millions of dollars. 1950 total is estimated.

Men of Industry

HOWARD M. PALMER
. . . Lewis-Shepard gen. sales manager

LEO P. GAJDA
. . . Arthur Colton Co. chief engineer

LESTER C. HIGBEE
. . . directs engineering, W. & L. E. Gurley

Howard M. Palmer was appointed general sales manager, **Lewis-Shepard Products Inc.,** Watertown, Mass., manufacturer of materials handling equipment. Since the war he has directed the company's power division sales.

Don Smith, plant manager of the Peerless plant of **Wellman Bronze & Aluminum Co.,** Cleveland, for the last six years, was appointed general plant manager of the company. His responsibilities now also include the Superior plant. Both plants are in Cleveland.

Doehler-Jarvis Corp., New York, elected **Charles Pack,** formerly vice president in charge of production, as vice president in charge of the newly formed engineering and research department. **W. G. Gutmueller,** formerly vice president and secretary, was named vice president and production manager. **Louis Miller,** director of labor relations, was appointed assistant vice president of the corporation. **Harold L. Samuels,** assistant secretary, was named secretary, and is succeeded by **H. C. Mandeville.**

Albert E. Binger Jr., was appointed industrial sales manager, **Philip Carey Mfg. Co.,** Lockland, O.

Allis-Chalmers Mfg. Co., Milwaukee, elected **Dr. H. K. Ihrig** vice president in charge of research. Dr. Ihrig resigned as vice president and director of laboratories at Globe Steel Tubes Co. **Philip C. Neuman** and **W. C. Campbell Jr.** are newly named sales representatives in Allis-Chalmers' Pittsburgh district office.

Leo P. Gajda was appointed chief engineer, **Arthur Colton Co.,** division of Snyder Tool & Engineering Co., Detroit. He continues as chief engineer of the Snyder organization which he joined 15 years ago. **Cecil Edgar** was appointed chief draftsman.

A. C. Perks was elected president and general manager, **Eclipse Fuel Engineering Co.,** Rockford, Ill. He was executive vice president in charge of production. **H. P. Howell,** formerly president, was chosen chairman of the board of directors.

Richard H. DeMott was elected president, **SKF Industries Inc.,** Philadelphia, to succeed **William L. Batt,** wartime production expert, who formally resigned to re-enter government service as chief of the Economic Cooperation Administration mission to the United Kingdom. Mr. DeMott has been vice president in charge of sales since 1943.

Herbert J. Werner joined **Columbia Machinery & Engineering Corp.,** Hamilton, O., as chief engineer, mechanical press division. He is well known in the metalworking industry for work in development of modern metal-drawing press design.

Edmund Fitzgerald was elected a director of **Chain Belt Co.,** Milwaukee, to fill the vacancy created by the death of **Walter Kasten.**

Charles Wilson was named chairman, **Worthington-Gamon Meter Co.,** Harrison, N. J. He is succeeded as president by **R. R. Andersen,** formerly vice president. **William Flanders** was named vice president.

Lester C. Higbee was appointed director of engineering, **W. & L. E. Gurley,** Troy, N. Y., manufacturer of engineering and surveying instruments. He was recently elected secretary. Mr. Higbee continues as sales manager, the position he has held since 1945.

Lawrence L. Garber was appointed general manager, **American-Fort Pitt Spring Division,** McKees Rocks, Pa., H. K. Porter Co. Inc.

Harry G. Morrow, sales manager for welded products, Spang-Chalfant Division, National Supply Co., was appointed vice president of **L. B. Foster Co.,** Pittsburgh, supplier of railroad trackage, steel sheet piling and pipe.

Charles L. Granahan, for the last 23 years employed in the continuous strip industry in America, was appointed technical assistant to the works manager of the Sollac plants, **Societe Lorraine de Laminage Continu,** at Hayange, Moselle, France.

Ralph S. Lorimer was appointed branch manager of **National Supply Co.'s** new Washington office. Associated with Atlas Imperial Diesel Engine Co. since 1917, he was, immediately prior to joining National Supply, in charge of the Lorimer Diesel Engine Co. of the Atlas Imperial organization.

Godfrey B. Grable was appointed to the staff of **Battelle Memorial Institute,** Columbus, O., where he will be engaged in the welding research program.

O. W. and **W. M. Potter** were ap-

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THE OHIO ELECTRIC MFG. CO. • 5900 MAURICE AVENUE • CLEVELAND 4, OHIO

Ohio MAGNETS

A-2027

pointed representatives of **Ironton Fire Brick Co.** in Minnesota.

Dr. Robert F. Thomson was appointed

DR. ROBERT F. THOMSON
... asst. in metallurgy, research lab. at GM

assistant head of the metallurgy department of **General Motors Corp.'s** research laboratories, Detroit. He was in the Detroit field office of International Nickel Co.

Climax Machinery Co., Indianapolis, appointed **J. Howard Patton** as plant manager, and **Robert S. Miller** as sales manager. Mr. Patton formerly was in charge of production at Brainard Steel Co.

Raybestos-Manhattan Inc., Manhattan Rubber Division, Passaic, N. J., appointed **John T. M. Frey** assistant manager of the New York branch, and **Lamar S. Hilton** as assistant sales manager, abrasive wheel department.

Walter F. Garlow was appointed sales promotion manager, **Howe Scale Co.,** Rutland, Vt. He resigned as advertising manager, Hewitt Rubber Division and Hewitt Restfoam Division, Hewitt-Robins Inc., Buffalo.

E. C. Barlow joined **Charles J. Haas Inc.,** Philadelphia, manufacturer of industrial chemicals, oils and greases. He had been with E. F. Houghton & Co. for 24 years as sales manager, central division, and was later transferred to Philadelphia as assistant to the executive vice president.

Charles D. Perrine Jr., specialist in missile homing guidance systems, joined the electronics and guidance section, San Diego, Calif., engineering department, **Consolidated Vultee Aircraft Corp.**

Harold H. Dice was appointed administrative assistant in the Electro-Motive Division, **General Motors Corp.,** at LaGrange, Ill. He was director of test and inspection since 1946. **John H. Anderson** was appointed to succeed Mr. Dice.

Carnegie-Illinois Steel Corp., subsidiary, U. S. Steel Corp., appointed **Francis C. Hardie** as manager of its Indianapolis district sales office succeeding **William E. Blackburn,** retired. He previously served as sales manager in Chicago, Cleveland and Detroit.

Joseph A. Conlon, district sales manager, Chicago branch, was appointed manager of allied sales for the mechanical goods division, **United States Rubber Co.,** New York. **Edwin D. Meade,** manager of western railway sales, was appointed to replace Mr. Conlon in Chicago.

Arthur W. Carlquist was appointed

ARTHUR W. CARLQUIST
... sales staff mgr., Gerrard Steel Strapping

general sales staff manager, **Gerrard Steel Strapping Co.,** Chicago, subsidiary, U. S. Steel Corp. He joined the company in 1933 and since 1942 has been assistant to the sales vice president. **Harry M. Reed** was appointed to the newly created post of Chicago division manager.

Dr. Alphone Pechukas, formerly director of research, Columbia Chemical Division, Barberton, O., Pittsburgh Plate Glass Co., was named engineering manager, chemicals division, chemical department, **General Electric Co.,** Pittsfield, Mass. **J. T. Farrell** was appointed assistant to the sales manager, small and medium motors, and in addition to specific assignments, will supervise the marketing and promotion division and a newly created gear-motor and packaged drive sales division. **Howard W. Bennett** was appointed manager, gear-motor and packaged drive sales division, and **Paul D. Ross** as manager of the Erie, Pa., d-c armored motor sales division. **Austen W. Boyd** was appointed in charge of the chemical process development Waterford, N. Y., group.

R. J. Weber was appointed assistant district manager, central district, **Westinghouse Electric Corp.,** Pittsburgh. He is succeeded as central station manager for the district by **P. T. Lagrone.**

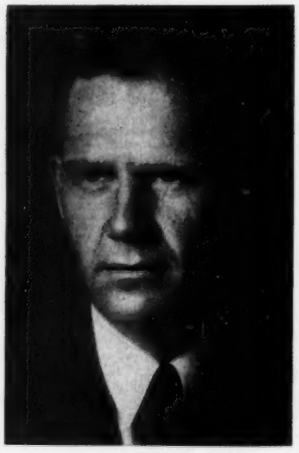
S. L. Moffatt, former superintendent, Portsmouth Steel Co., and more recently associated with a new steel plant in Chile, S. A., is now connected with **Pittsburgh Metals Purifying Co.,** Pittsburgh.

R. E. Moore, vice president and secretary, Bell & Gossett Co., was elected to the board of directors, **Kropp Forge Co.,** Chicago.

Gordon L. Leach will resign Dec. 1 as manager, automotive division, **Hunt-Spiller Mfg. Corp.,** Boston.

Cutler-Hammer Inc., Milwaukee, appointed **O. P. Robinson** as manager of its Pittsburgh district sales office, succeeding **T. S. Towle,** retiring after serving in that position for the last 21 years. As manager at Pittsburgh, Mr. Robinson will also supervise the Youngstown office in the sale of motor control and allied electrical apparatus.

B. C. Blake was appointed vice president and general manager, **Connors Steel Co.,** Birmingham, division of H. K. Porter Co. Inc. He succeeds **H. P. Bigler,** resigned for reasons of ill



B. C. BLAKE
... Connors Steel V. P. and gen. mgr.

health. In his new position Mr. Blake, formerly works manager, will be responsible for operation of the Connors division with which he first

CHARLES H. EISENHARDT
. . . mgr. electrical products sales, A S & W

WILLIAM F. PIOCH
. . . mfg. engineering mgr., new Ford division

JOHN W. THOMPSON
. . . product mgr., Carpenter Steel

became associated in 1929 in the structural engineering dapartment.

Charles H. Eisenhardt, assistant manager, electrical products sales division, was promoted to manager at **American Steel & Wire Co.,** Cleveland, subsidiary, U. S. Steel Corp. He succeeds **T. F. Peterson,** resigned. **Ira N. Greaves** was appointed superintendent of industrial relations at the Duluth Works, and **John C. Scott,** superintendent of industrial relations at the Waukegan Works, Waukegan, Ill. Mr. Scott succeeds **Francis T. Swain,** resigned to take another position.

E. J. Rathsack was appointed secretary and engineer in charge of production, **Kenworth Metal Stamping Co.,** Milwaukee. He was engineer in charge of the electronic induction heating department of Allis-Chalmers Mfg. Co.

William F. Pioch, Ford Motor Co. production engineer, was appointed manager of manufacturing engineering of the newly formed aircraft engine division at Chicago. He was chief engineer of the Willow Run bomber plant, and has been with Ford for 38 years. From 1926 until his appointment at Willow Run, Mr. Pioch served as chief tool engineer for the company. **John B. Lawson** was named manufacturing manager, automatic transmission division, at Cincinnati. He previously was division controller, joining Ford in 1949 as a member of the controller's administrative staff.

Gordon Porterfield has returned to the New York office of **Baldwin Locomotive Works** as sales representative for hydraulic presses, power tools, hydraulic turbines and Pelton products. He was a member of Baldwin's engineering staff for 11 years.

John W. Thompson was appointed product manager, **Carpenter Steel Co.,** Reading, Pa. He will supervise stainless, alloy and tool steel sales and continues responsible for product development, advertising and marketing. **William R. Staples,** West Coast representative, was appointed assistant to the manager of sales, Alloy Tube Division, Union, N. J., and **Paul E. Kelly** takes over the West Coast duties.

H. K. Pohlman, formerly president and general manager, Arrowhead Rubber Co., Downey, Calif., subsidiary of **National Motor Bearing Co. Inc.,** Redwood City, Calif., was promoted to director of manufacturing at the parent company. **Alvin C. Hewitt,** vice president of Arrowhead, succeeds Mr. Pohlman as general manager of the rubber division. **Cyrus Wintersea** succeeds Mr. Hewitt as assistant general manager.

OBITUARIES . . .

Clinton G. Thomas, 68, founder, former president and chairman of the board of **Thomas Steel Co.,** Warren, O., died Nov. 11 at his home in Cleveland. He retired in 1946.

Ernest V. Moncrieff, 60, former president and chairman, **Swan-Finch Oil Corp.,** New York, died Nov. 5.

W. Neal Gallagher, 55, president, **Automatic Washer Co.,** Newton, Iowa, died Nov. 12.

Burt T. Anderson, 66, transportation research director, **Union Switch & Signal Co.,** with headquarters in Swissvale, Pa., died Nov. 8.

William D. Loughlin, 57, chairman of the board of **Boonton Radio Corp.,** Boonton, N. J., manufacturer of radio-frequency precision measuring instruments, died Nov. 12 after an illness of several months.

August Spindler, 84, president, **August Spindler & Sons Inc.,** Jersey City, N. J., bronze foundry, died Nov. 6.

Lewis J. Firth, 92, one of the last of a group of steelmakers who pioneered the tool steel industry in this country, died Nov. 3. He entered his grandfather's firm, Thos. Firth & Sons Ltd., Sheffield, England, at the age of 16. Years later the growing American business indicated need of a plant in this country and in 1897 he became president of the new **Firth Sterling Steel Co.** at McKeesport, Pa. He remained president until 1937, when, succeeded by his son, he became chairman of the board of directors. Mr. Firth retired in 1944 at the age of 86, having completed 70 years in the tool steel industry. As an industrial pioneer he had also been associated in formation of many other steel companies in this country.

Thomas P. Kirk, 47, purchasing agent, **Laclede Steel Co.,** St. Louis, died Nov. 4 following a heart attack.

Elmer S. Ward, assistant treasurer, **United Engineering & Foundry Co.,** Pittsburgh, died Nov. 6.

W. V. Flood, 53, vice president and comptroller, **Electric Auto-Lite Co.,** Toledo, O., died Nov. 7 during a business trip to the company's Lockland, O., plant near Cincinnati.

Alfred C. Huber, 46, president, **Supreme Metal Treating Co.** and **Huber Metal Processing Co.,** Milwaukee, died Nov. 8 of a heart attack.

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Production AND Engineering
NEWS AT A GLANCE

EXPLOSIVE DATA—Information which may be used to advantage by metallurgists is being obtained through a new tool these days—explosive charges (p. 98). Extreme pressures produced by the charges, often as much as five-million pounds per square inch and of very short duration—something like two-millionths of a second, are helping shed more light on the resistance of metal and mechanical systems to shock or impulsive loading like those in aircraft landings.

GEARS VIA CONVEYOR "EXPRESS"— Clever integration of materials handling with production is one reason why the Gear & Forge Division of Clark Equipment Co., Jackson, Mich., is able to operate on a mass production basis in processing short run parts. Gear fabrication lines, for example, each include a system of gravity roller conveyors linking the entire line from one end to the other. The conveyor in each instance is installed between parallel lines of machines and consists of three individual sections. The two outer sections move parts progressively from one machine to another. The center section is the express line. This moves components which do not require intermediate handling—those that must reach some station far down the line without interruption.

TEST NIPS BRAZING TROUBLES— Brazing troubles no longer are headaches at Riverside Metal Co. (p. 99). When it discovered some of its customers were having difficulties in brazing its cupro-nickel, the company devised a testing method that involves the use of a coupon from a heat similar to the one used for checking chemical analysis. But there the similarity stops. The coupon is taken to the company's laboratory rolling mill to be reduced to a thinner gage. Test piece then is put into a combustion tube furnace and held for 15 minutes at 2050° F to duplicate time, temperature and atmosphere conditions of actual brazing. If the surface comes out bright it means the heat is brazeable —if not the heat is used for some other purpose.

NO WAITING IN "FURNACE FEEDING"— Charging an open hearth furnace by conventional methods is like a waitress trying to serve several tables at one time—without timing, someone is forced to wait. Scrap iron and other charge materials are trundled in on rails on a string of buggies, past several furnace doors, and each furnace is "fed" as required. While cars are stopped to charge one furnace, no cars can pass to reach the others down the line. A new system of flow eliminates this by allowing individual charging of any furnace at any time. The method, being installed at Armco includes the use of four hydraulic hoists to serve three open hearth furnaces. This provides each furnace with a hoist on either side of its doors. Hoist platforms are loaded with one charge buggy at a time, each being hoisted to door level and unloaded. Flexibility of the system speeds charging of each furnace, reducing time from 3½ to 1½ hours.

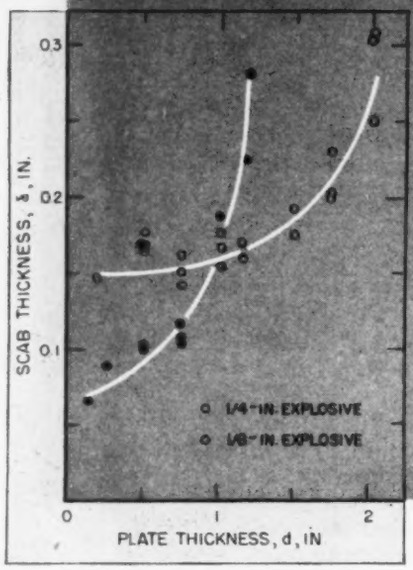
DESIGN: PRODUCTION KEY— Production-wise, design can mean a lot of difference in your schedule especially when it comes to assembling your final product (p. 100). At Torrington Mfg Co., key to low-cost, high-production manufacture of centrifugal fans can be traced directly to design simplicity that involves four pieces of metal which combine to make a complete blower wheel. The four-piece unit replaced a design that featured individual blades which were slow and expensive to manufacture.

WALNUT SHELLS NOW RICE— The automotive industry once again is reaching into the kitchen cupboard for help. This time for rice. Ordinary rice is the basis for a unique method of cleaning carbon deposits from combustion chambers of high compression engines without removing the cylinder head. An automotive engineer made the discovery and his company developed it into a highly useful piece of service equipment. The device utilizes rice under air pressure to blast carbon from combustion chambers through spark plug openings. About half pound of rice is consumed in cleaning an engine.

STACKS AND EXPANDS—New system of stacking developed by DuPont makes it possible to stack higher and use more of the space usually allotted for aisle purposes (p. 104). Method employs suspended fork truck elements bringing these down from the ceiling to pick up and stack palletized or other types of loads. Flexibility of movement is provided by using the trolley of overhead bridge cranes. The system is said to pick up as much as 52 per cent more space in many plants.

SUPER PRECISION—Most revolutionary development in watchmaking in over 20 years is the timepiece that winds itself. Dr. Rudolph Schild, the Swiss watchmaker whose regard for time and its measurement is comparable to that of an Einstein, says the new watch winds itself on a ball bearing with five miniature steel balls each half the size of a pinhead. It takes 25,500 of these balls to weigh an ounce, yet each is electronically measured to extremely close tolerances. An ordinary watch, he says, has 161 parts —the more delicate ones being accurate to 400 thousandths of an inch or one-thirtieth the thickness of a hair.

Explosive Forces Widen Metallurgical Studies



Extreme pressures, often as much as five-million pounds per square inch, furnished by explosive charges may help shed more light on the resistance of metals and mechanical systems such as occur with aircraft landings and machine impact

Fig. 1—Thickness of each scab on plates was measured as accurately as possible and plotted for each of two thicknesses of explosives. Each point represents a single test. Curves indicate that for identical initial stress waves the thickness of the scab increases with thickness of plate until no scabbing occurs

EXPLOSIVE CHARGES may be extremely useful tools for studying the reaction of metals under extreme pressure. Besides aiding the armed forces solve ordnance problems, the charges may help shed more light on the resistance of metals and mechanical systems to shock or impulsive loading like those found in aircraft landings, shipment of materials and machine impact.

Forces produced by explosive charges are extremely high, often as much as five-million pounds per square inch. They also are of short duration—not more than two-millionths of a second.

Metals subjected to such pressures behave strangely, states a Navy Bureau of Ordnance report made by Dr. John S. Rinehart of the terminal ballistics research branch. Possible reactions, he says, include absorption of energy by plastic flow of the material, absorption of energy by fracturing of the material, momentary storage of energy by compression of the metal and transmittal of the energy as an elastic wave.

Scabs Tell the Story—Most common effects made by a high stress wave of short duration, he states, is scabbing. It is the fracturing of the metal near a free surface quite a distance from the area of application of the pressure or stress impulse. Fundamentally, the metal fractures because its tensile strength is topped by the compressional stress wave being reflected as a tension wave at the free surface of the metal. The thickness of the scab is governed, among other things, by the way the incident and reflected stress waves interfere.

Scabbing is most clearly demonstrated when a layer of explosive (⅛-inch) is applied to the back of a metal plate. In tests involving mild steel plates ½, ¾ and 1 3/16-inch thick, it was shown that scab thickness increased with plate thickness. No fracture occurred in a thicker plate (1½-inch) presumably because the stress wave had decayed to a value that was less than the tensile strength of the steel.

Thicker Plate, Thicker Scab—When the reflected stress wave is strong, relatively smooth fractures occur. As its strength decreases (as the thickness of the plate increases) the region of fracture becomes less well defined and a considerable amount of flaking occurs.

A similar series of plates were subjected to the pressure produced by a 1¼-inch layer of explosive. Scabbing occurred, with the thickness of the scab increasing with plate thickness, up to a plate thickness of 2 inches.

Precise determination of the thickness of the scab was not possible because of the roughness of the fractured surface, but usually three plates of each thick-

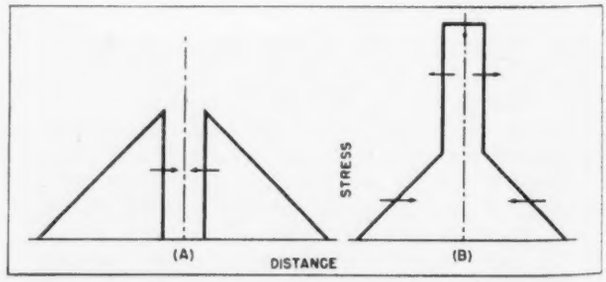


Fig. 2—This shows stress distribution of a solid steel rod just before waves meet (A) and after (B). Metal within this region of high stress probably behaves as a liquid exerting high hydrostatic pressure on its immediate surroundings

ness were tested and the scatter in value was not excessive.

Qualitatively, Dr. Rinehart says, the most interesting things shown by the two curves in Fig. 1 are, first, that thickness of scab increases rather than decreases with plate thickness, and second, that under some conditions a ⅛-inch layer of explosive produces a thicker scab than a ¼-inch layer.

Liquid Behavior—In another experiment, a solid steel rod was coated with a thin layer of explosive and detonated, the rod fragmentized as though it had been blown outward by a high pressure originating along the axis of the rod. The explosive was ⅛-inch thick and the rod was of mild steel 1 inch in diameter. Increasing the thickness of the explosive, and hence the magnitude of the stress as well as its duration causes the rod to fragmentize into even finer pieces.

Most plausible explanation of what physically occurs is that compressional stress waves of high intensity meet and produce momentarily a region of very high stress concentration. The schematic diagram, Fig. 2, shows the stress distribution just before and after the stress waves meet. Metal within this region of high stress probably behaves as a liquid and exerts a high hydrostatic pressure on its surroundings. When this original pressure ceases to exist, the plate or rod flies apart violently.

Tube Turns Into a Rod—If thin-walled tubing is substituted for the solid rod in the above experiment, a similar effect occurs. The thickness of the fragments is considerably greater than the original wall thickness of the tube. What happens is the tube collapses under the high pressure of the explosive and forms a small rod. Concentration of stress near the center of the rod is extremely high because of the way it was formed. Upon release of the external pressure, the rod flies apart.

Scabbing and high stress concentration combine to produce striking effects when the outside surface of a heavy-walled tube is subjected to an explosive stress. In experiments, thicknesses of the explosive layers employed were ⅛ and ¼-inch. In all cases, the original tubes, ¼, ½ and 1-inch thick, separated into two tubes, and in some cases the inner tube collapsed and blew apart. In doing so, it plastered itself against the inside of the outer tube. In the case of a 1¼-inch diameter tube with ¼-inch wall, the internal explosion was so violent that the outer tube was also ruptured.

The "Explosive" Proof—The relative thicknesses of the inner and outer tubes compare closely to those predicted from previous scabbing results. Velocity with which the inner tube begins its collapse should vary linearly with applied stress, and the violence with which the inner tube flies apart should increase with its velocity of collapse. Examination of the specimens substantiated this.

In another test, thin steel plate was sandwiched between two layers of explosive. The plate separated into two plates of about equal thickness, the fractured surfaces being very smooth. These tests, says Dr. Rinehart, are yielding much information of basic scientific interest applicable to many peacetime as well as military problems.

Simulated Test Conditions Eliminate Brazing Defects

INHERENT variation in certain lots of metal make them more difficult to draw, bend or join. That has been the painful experience of many fabricators. To detect the variations possibly caused by minute quantities of impurities, elaborate testing equipment is required.

Riverside Metal Co., Riverside, N. J. wanted to be sure its cupro nickel could be joined by brazing, so it developed a test that will assure that a particular lot would give no trouble.

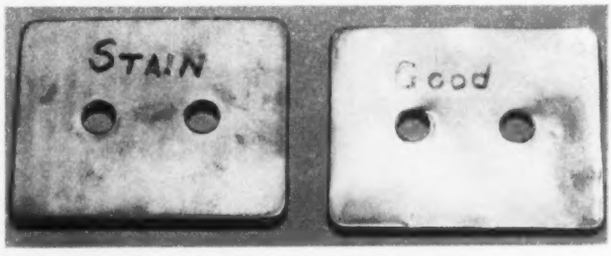
Metal Psychologist — A customer, a manufacturer of heat exchangers, periodically was shutting down its production line because of defective brazing of joints. To find the reasons why the brazing metal and parent metal were unjoined, Riverside took a look.

Investigating surface preparation and other checks showed only particular heats of the cupro nickel used in the heat exchangers were causing trouble. Physical and chemical tests showed no reason for the unfriendly behavior. But Riverside finally turned up a method for consistently detecting nonbrazeable heats.

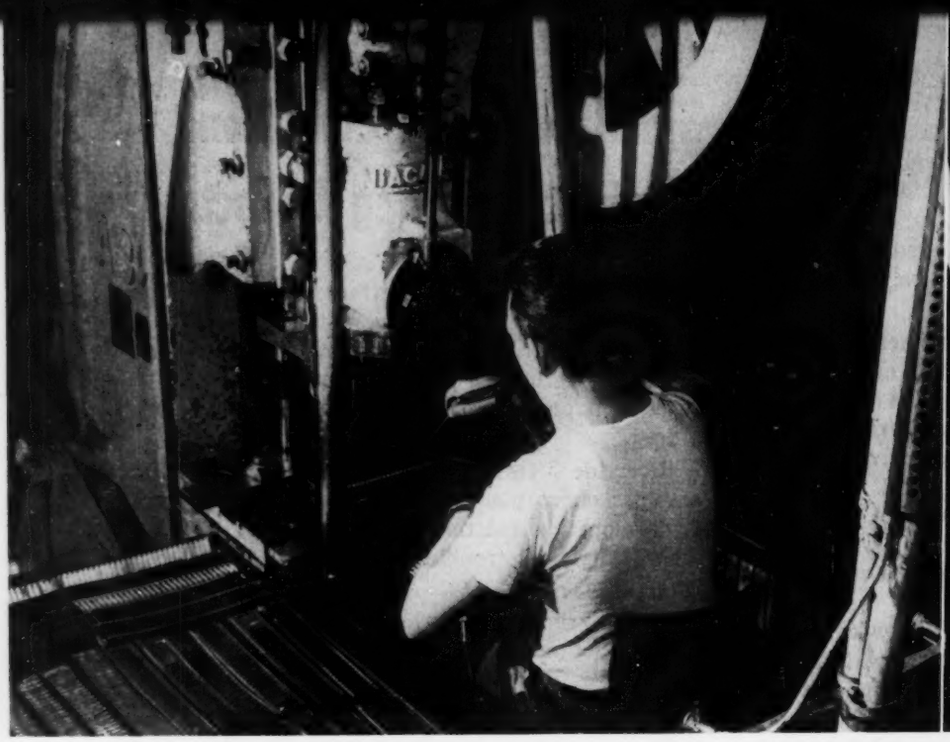
Ample Sample—During the casting of each heat a test coupon for determining brazeability of the finished product is taken. (It had been standard procedure to take such a sample of each heat for chemical analysis purposes, but the test is now being supplemented by the new procedure.)

Test coupon is taken to the company's laboratory rolling mill, there to be reduced to a thinner gage. These test pieces are put into a combustion tube furnace and held for 15 minutes at 2050° F; this duplicates the time, temperature and atmosphere conditions of actual brazing.

"Bright" Idea—The surface of the sample is examined visually after it is removed from the furnace. If the surface is bright, the heat is acceptable for brazing. If the surface is dull, the heat is rejected for heat exchanger stock and is diverted to some other application requiring no brazing during its fabrication. This test, simple as it is, has proved to be extremely valuable to producer and customer.

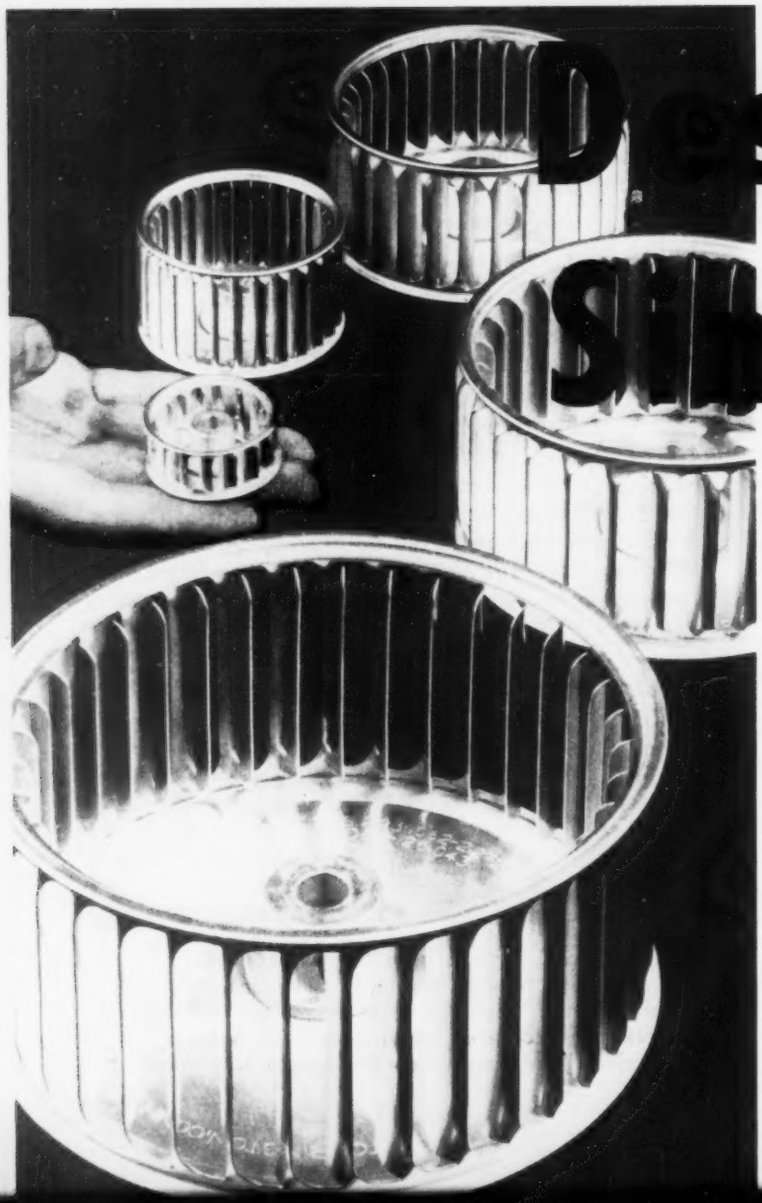


Cupro nickel samples after having undergone combustion tube furnace heating to determine suitability for brazing. Bright finish on sample at right shows satisfactory condition for brazing; dull finish at left rejects heat from which this sample was taken



Entire blade strips for centrifugal fans are made with gang tools in two operations. The first lances all blades in the strip at one blow, cuts strip to proper length. Second, bends up blade foot and forms proper angle and radius on the blades

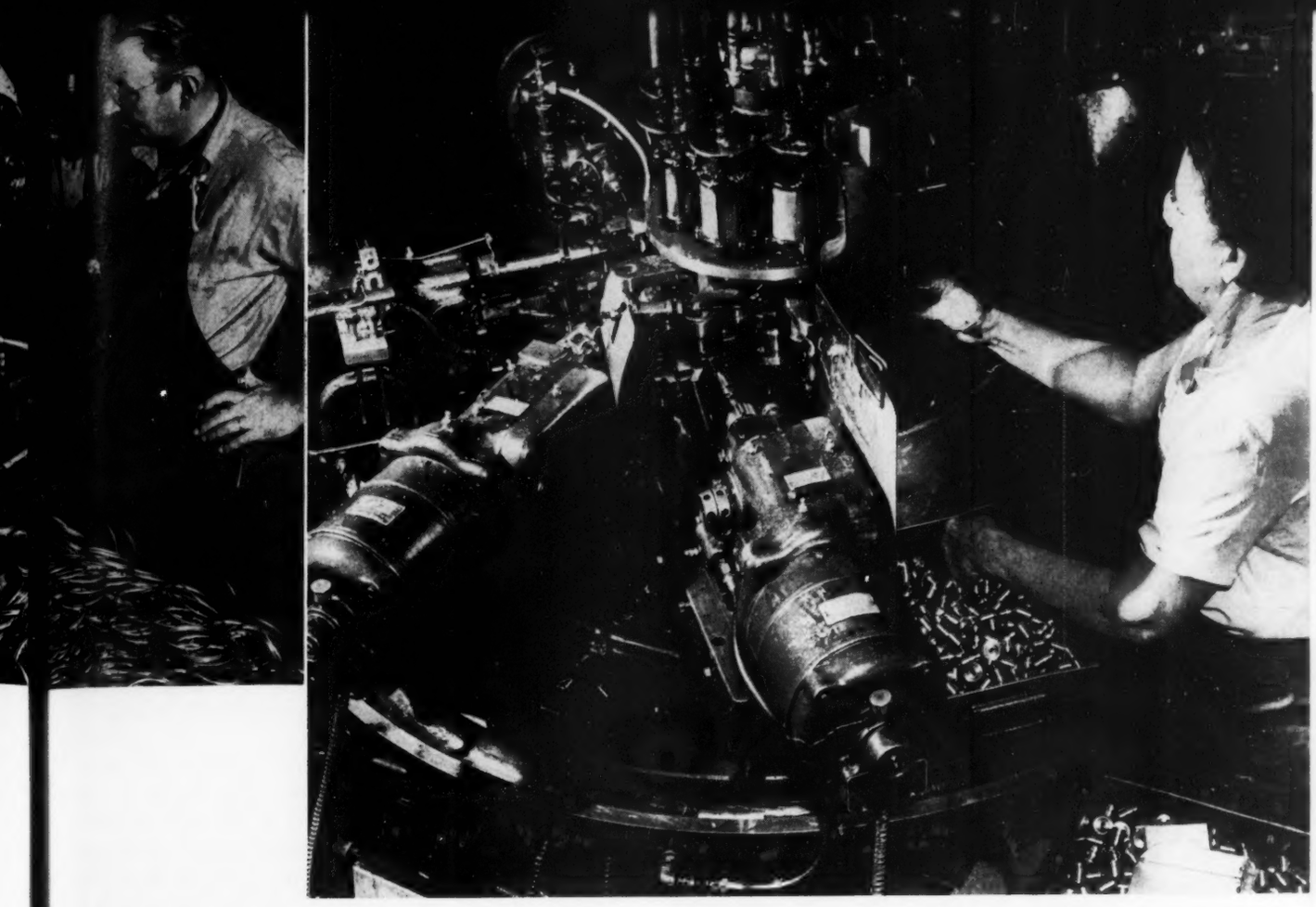
Front rings and backplates are also made with progressive dies. Material is first drawn to shape, pierced and finally the outside cut made and channel for blade strip formed. Metal is fed from coils weighing 750 to 1500 pounds



Design Simplicity

Key to Blower Wheel Manufacture

Four-piece construction of Torrington Airotor metal blower wheels is a "natural" for mass-production processes including stamping, automatic screw machine operations, drilling and tapping, rolling, assembly and inspection



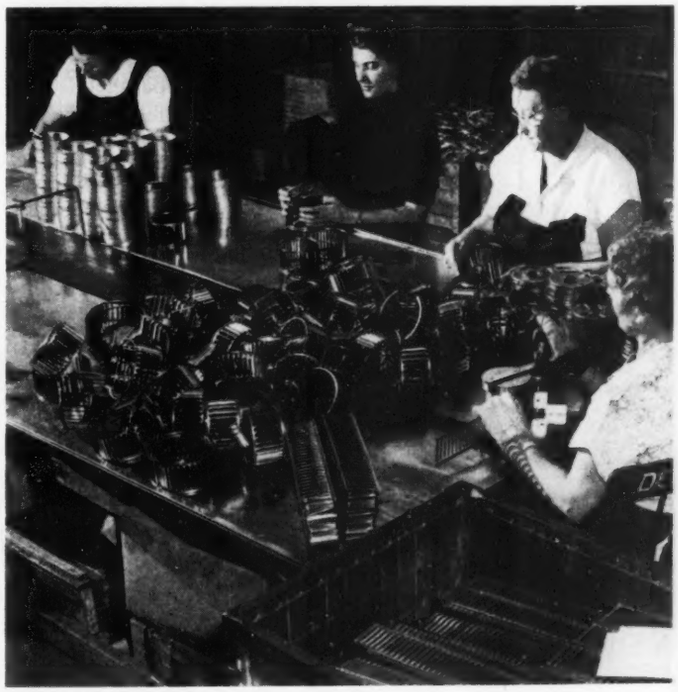
Kingsbury automatic drilling and tapping machines drill, countersink and tap setscrew holes, as well as chamfer cutoff end of hub bore. Air-operated and automatic holding fixtures especially designed by Torrington speed up this operation

DESIGN simplicity, in which four pieces of metal combine to make a complete blower wheel, is the key to low-cost manufacture of the type centrifugal fan made by Torrington Mfg. Co., Torrington, Conn. The company's mass production techniques were evolved as the result of the enormous demand for blower wheels by the air-moving industry.

This type of fan is used in most pressure atomizing oil burners, in automobile heaters, kitchen ventilators, room air conditioners, window ventilators, space heaters, etc. The smallest sizes, 1½ and 2 inches in diameter, are broadly used in electronic applications, cooling tubes and transformers. Over 50 sizes of blower wheels in 14 different diameters are assembled on four complete assembly lines.

Enter Mass Production—The simple, four-piece design was introduced to replace a design which featured individual blades, and was slow and expensive to manufacture. As the public accepted the idea of having the air about them heated or cooled, with forced delivery just where they wanted it, and with air volume controlled, demand for the blower wheel made necessary the development of progressive die and other tooling for mass production. Manufacture and assembly of the components are illustrated in the accompanying photographs.

Not shown are the screw machine operations used to machine hubs for both blower wheels and Torrington's companion product, fan blades. Steel or aluminum hubs are made on 6-spindle automatic screw machines. The majority of the company's requirements are made on their own equipment, but some are purchased from outside suppliers. Opera-



Blade strips are rolled into cylindrical shape at the head of the assembly belt. Next, blade feet are inserted into the channel in the backplate. A third worker adds the front ring and slides the assembly onto the moving belt

At the first station along **the 130-foot assembly belt, the wheel is "closed"** by **spinning backplate** channel **rim over blade** foot. **Adding the hub to the** now **solid assembly at the** next **station readies the** wheel **for finishing operations**

tions are: Rough form, drill, counterbore, finish form, ream and cutoff.

Wheels Through the Field—Finishing operations consist of reaming the hub bore to size, truing, balancing, inserting setscrews, inspecting and packing. Wheels come off the assembly line complete, except for plating, lacquering and a final wash.

Since an unbalanced blower wheel could cause serious damage to the equipment in which it is installed, the balancing operation calls for the highest precision. Dynetric balancing machines show operators the location and degree of unbalance.

All blower wheels for which a lacquer finish is specified are put through an electrostatic spray process. A horizontal conveyor with spindles carries the wheels through the field. Shape of the wheels requires a minimum of three spray guns. A bank of infrared lamps force-dries the lacquer.

While the entire Torrington operation is essentially one of manufacturing to order, a stock of 50 to 150 of each size is maintained.

Since the hub bore is a variable specification, the hub is not inserted until the customer's specification is known. Truing, balancing and other finishing operations also take place after the wheel is removed from stock.

Dial indicators mounted on specially designed bench fixtures are used to check each wheel for both radial and axial runout. Gages indicate any distortion which may have occurred during wheel closing or hub peening operations. Operator corrects the runout by applying pressure at an opposite point

Balancing operations demand great precision. Dynetric balancing machines indicate the location and degree of unbalance. Operator corrects this with an application of solder. Experienced opertators usually accomplish complete balance in one try, but every wheel is retested until satisfactory

Machinery Field

By GUY HUBBARD
Machine Tool Editor

PURDUE'S MACHINE SHOP: Much has been said and much has been written about the up-to-date production machine shop on the campus of Purdue University. As a member of the public relations committee of American Society of Tool Engineers, I have just had an opportunity to visit this shop.

I join with other members of that committee in frank admission that all the good things that fellow-member Prof. Halsey F. Owen has been telling us about the Purdue shop, are true. One of our members —Willis Ehrhardt of St. Louis—is a well-known figure in the tool and die industry. He took one look at the layout and said: "Turn this over to me on Saturday and production would be rolling out on Monday."

Ever since colleges and universities have had machine shops, which dates back to the beginnings of the "land grant" institutions immediately following the Civil War, they generally have been the "antique shops of the metalworking industry." I don't know that any of Eli Whitney's original machine tools ever were installed in any of them, but certainly they have been and still are, in too many cases, repositories for some of the rarest specimens of vintage machine tools.

There have been a number of reasons for this condition. None of them are good. One of the worst is a persisting impression in social and academic circles that there is something slightly disreputable about machine shop work. Gentlemen's sons might become physicians, lawyers, clergymen, army and navy officers, architects, sculptors, authors, artists (maybe), engineers (perhaps), but "dirty machinists" *never*.

As a youngster I used to be puzzled by the fact that men of ingenuity and skill who worked in a machine tool plant in Windsor, Vt., were considered to be on a lower level than men of ingenuity and skill who worked in the studio of sculptor Augustus Saint Gaudens—right across the Connecticut river in Cornish, N. H. About the only difference that I could see was that the men who created machines were spattered with lard oil, while the men who created statues were spattered with modeling clay.

Folks in Indiana traditionally are more interested in practical economic realities than in artificial social distinctions. They recognize that machine shop practice plays an essential and respectable role in modern engineering education. On that basis it was decided that antique tools in the Purdue University machine shop make no more sense than "flint-and-steel" for lighting bunsen burners in the chemical laboratories.

Quick action of the university authorities in garnering the cream-of-the-crop of war surplus machines, good sense in properly housing and setting up these machines and the practical manner in which they are being used—all are deserving of high praise. Purdue sets a standard which others well can follow.

"REGRADING" MACHINE TOOLS: One of the department heads in a large company whose name I will not mention but whose products are favorably known to all of us, recently took me "behind the scenes" to show me how he stimulates machine tool replacements.

One of the stumbling blocks which he formerly encountered in putting through requisitions for new machines, was the question of profitable disposal of the old ones. They were too good to scrap. At the same time, used machinery prices and trade-in allowances always struck those who controlled the purse strings, as being entirely too low.

Having in his organization a group of tool engineers and rebuilding craftsmen of unusual ability, he now works out with them "regrading" possibilities of each machine which he hopes to replace with a new and more productive model. For instance, he showed me a battery of special chucking machines—the like of which are not available on the open market—which were "regraded" from a battery of screw machines which in turn were replaced by new machines.

When he approached the "money bags" men with the proposition that—instead of being scrapped—those old automatics would take on a new and highly profitable lease-on-life (this at very moderate rebuilding and retooling cost), the purse strings promptly were loosened and the new machines purchased. This "psychological approach" is profitable both to his company and to the machine tool industry.

LOGISTICS OF COOLANT: In reports on military actions we hear more and more about the problems of logistics. I understand that this simply means having what is needed, where it is needed, when it is needed. If that be true, then logistics is equally important in production machine shop practice—in getting coolant where it is needed, when it is needed.

All the elaborate systems of tanks, sumps, pumps, piping, etc., mean little if the coolant does not get to its point of action—which is a tiny area at the edge of a cutting tool. There is considerable difference of opinion about what actually goes on at that point. What we do know is, that action there—including high heat—tends to repel coolant from the place where it is needed the most.

From the days when lard oil first trickled down a wire, many ingenious things have been tried—including squirting at high pressure, flooding at low pressure, submerged cutting and atomization. At the same time, coolants themselves have been improved to meet new conditions brought about by high cutting speeds. The end is not yet.

As a research project, scientific study of application of coolant on machine tools still holds possibilities almost as great as those which faced Frederick Winslow Taylor when he undertook his basic studies in the art of cutting metals in 1880. He spent 26 years and $200,000 on those studies. Their value was incalculable.

Fig. 1—Stacker crane has a rigid nonrotating mast. Pickup carriage is rotated at any elevation to the desired direction for storing load

Overhead Tiering "EXPANDS

New stacking system suspends basic fork truck elements from the ceiling, improving space utilization by reducing aisle widths

By FRED A. MILLER
E. I. Du Pont de Nemours & Co. Inc.
Wilmington, Del.

OVERHEAD tiering of pallet and skid loads, drums and rolls by means of a new "stacker crane" is saving Du Pont valuable storage space and cutting the company's materials handling costs substantially.

The stacker crane (it's called that because the stacking feature of the fork truck is simply attached to the trolley of an overhead bridge crane) was developed by Du Pont to maintain maximum storage capacity and to achieve the economies possible by the fork truck and pallet system.

Aisles Squeezed—To maintain minimum aisle widths, designers concluded that the mechanism had to be suspended from above. So, an overhead-supported rigid mast was devised with a pick-up to improve space utilization over that of the fork truck system by reducing aisle widths required. The mast is attached to the trolley of a conventional overhead bridge crane. That mast is secured to a turntable built into the bed of the trolley. A hoisting carriage with any type load-engaging device completes the development.

The mechanical arrangement makes possible the maximum accessible storage capacity for a given area. The operating aisle width required is about the length of the load plus 18 inches. In the case of a 4-foot pallet, the aisle required is 5½ feet.

The stacker crane affords a 52 per cent savings in the space as compared with the fork truck. For one-column-deep pattern, the storage space ratio is of the order of 9 to 13.65.

The fork truck and pallet system is accepted generally as the most economical means for storing raw materials and finished products. But a standard 4000-pound-capacity truck with 18-inch square pallets requires a 12 to 13-foot-wide operating aisle width; manual stacking requires a 5 to 6-foot aisle width. Thus, storage capacity is reduced 10 to 15 per cent by the use of the fork truck. Increased investment cost also is experienced in planning new storage areas, since the additional aisle space for fork truck operations must be provided at the prevailing cost of 75 cents to one dollar per cubic foot for building construction.

Fourteen So Far—To date, fourteen installations are in operation or will be completed in the next few months.

From data presented by the author at the third biennial Materials Handling Conference sponsored by Westinghouse Electric Corp., Buffalo, Oct. 24 and 25.

Two stacker cranes were installed in a new cellophane plant for storing 1000-pound rolls. A subsequent check of cost sheets showed that the new system was handling 1000 pound rolls at a savings of 60 per cent, as compared with the performance of the next best system. The only difference incorporated in these cranes is the substitution of a motorized roll core-engaging mechanism on the lifting carriage in place of the usual fork pick-ups. Rolls are stored to a height of 14 feet with perfect safety. Since all major motions are pushbutton actuated, it is possible to use women operators.

Storage & Turnover—A stacker crane in operation in a yarn plant, was justified on the basis of a 58 per cent increase in storage capacity in an existing building. If fork trucks were used with the usual wide aisles, it would have been necessary to increase the storage area by about 180,000 cubic feet of building construction.

Stacking crane for storing 4000-pound skid loads of finished products was approved on the basis of eliminating the need for doubling the size of the shipping area that would have amounted to approximately 200,000 cubic feet of additional building construction. Increase in storage capacity was gained by storing the skid loads two-high. The upper layer was stored by stacker crane on steel racks—operating in the same aisle width (approximately 6 feet) required with hand jack truck for placing the lower layer.

As the maximum loads approach 4000 pounds, all motions—including rotation of the mast—are motorized and controlled from a pushbutton station at floor level. The operation is not one of storage alone; a high-turnover shipping proposition of more than several hundred units per day is involved.

Solves Solvent Storage — Architects designing the new Du Pont experimental station buildings near Wilmington submitted a proposed layout for solvent drum storage. Since any one of the 500 units stored must be available without shifting others, the drums were placed on end and arranged in double rows with an operating aisle between. In the original design, consideration was given to a conventional method of storing that required a building 60 x 170 feet.

Du Pont materials handling consultants using special storage racks and a stacker crane found that a 42 per cent reduction in building size could be realized. This reduction not only paid for the equipment, but showed a substantial savings in investment dollars. A proportionate reduction is effected in the ventilating system necessary to remove hazardous solvent vapor from this building.

Fig. 2—Material in rolls is stored safely to a height of 14 feet

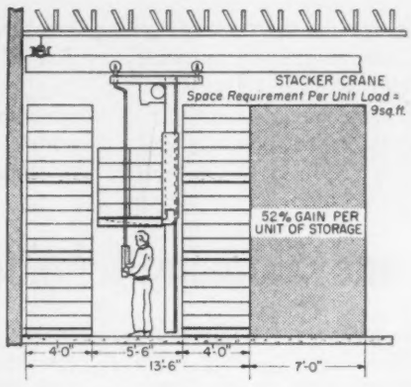


Fig. 3 (left)—Drawing illustrating greater space utilization by stacker crane

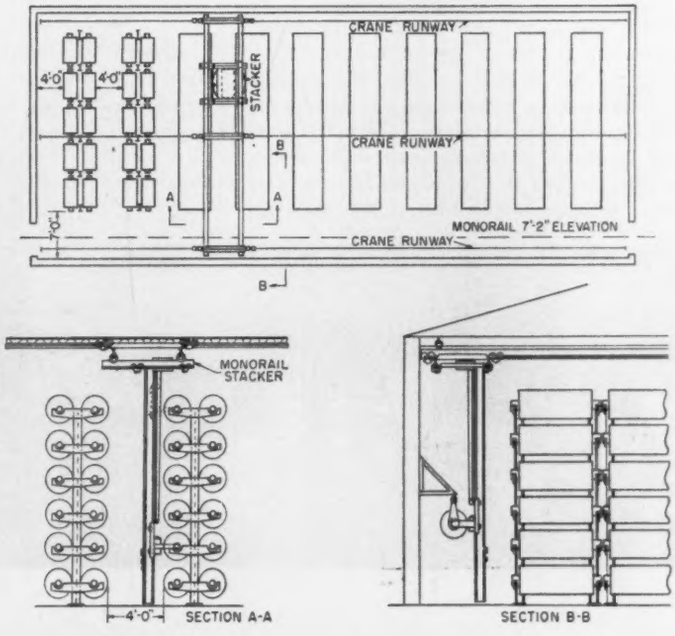


Fig. 4 (below) — Layout of an installation for a new cellophane plant

The storage and dispensing area stacker cranes are of explosion-proof construction. All motors, controllers, cable reels, and electric wiring meet the National Board of Fire Underwriters' Class I, Group D specifications. Palletized and other forms of unit load storage are entirely feasible with the stacker crane. Flow of materials to and from the hazardous area can be handled by conveyors or by hand lift trucks.

Three stacker cranes were purchased by a large outside company. They will be employed in a selective storage service to stack jet engines on pallets in steel racks.

Tires That Skid—Although the rigid mast stacker may be mounted on any type of overhead crane or double monorail carrier, existing installations were made on underslung monorail cranes equipped with rubber tire traction drive units. This drive is most desirable for warehousing operations, because an error in maneuvering the load merely results in tire slippage instead of damaged merchandise. The bridge and trolley drives are adjusted readily to provide sufficient traction for normal movement, but insufficient to push over a stack.

Another desirable feature of the stacker crane is its increased stability when high tiering or stacking is necessary. Stability is not dependent on floor conditions.

How About Head-room?—The question of additional head-room requirements for stacker crane installations and the load effect on present steel building structures is anticipated. The answer: Overhead clearance for runway, crane, and stacker unit will range from 21 to 47 inches depending on capacity and span. This distance normally is required for spread of sprinkler heads and diffusion of the lighting, and therefore little, if any, additional building cost is involved.

However, in special cases additional height may be required. If so, the cost of providing several feet of side wall construction is much lower than providing additional floor and roof construction. Actually, alterations of that type were required on several of the installations noted. Costwise, they still resulted in justifiable projects. Load effect imposed on present building structures is best answered by the fact that eight of fourteen cranes mentioned previously were installed in present buildings without any change in the steel structure. In most cases the crane bridge is a self-supporting beam, and therefore imposes a direct shear load on the building columns.

To derive further benefits from the new device, present and future planning includes studies in other plants where many especially difficult handling problems have resisted solution for years. There are numerous plants where considerable stores of miscellaneous and maintenance items must be stocked for constant demand.

American MonoRail Co., Cleveland, is licensed to build the new crane stackers.

Die Service Facilities Offered

Welding and finished machining required to complete Die-Co special die sets ready for the tool steel are produced by new service facilities of Die Supply Co., Cleveland. Purchasers of the die sets can order this work included thus eliminating their own responsibility for the welding and finish-machining which would involve extra time and inconvenience in their plant.

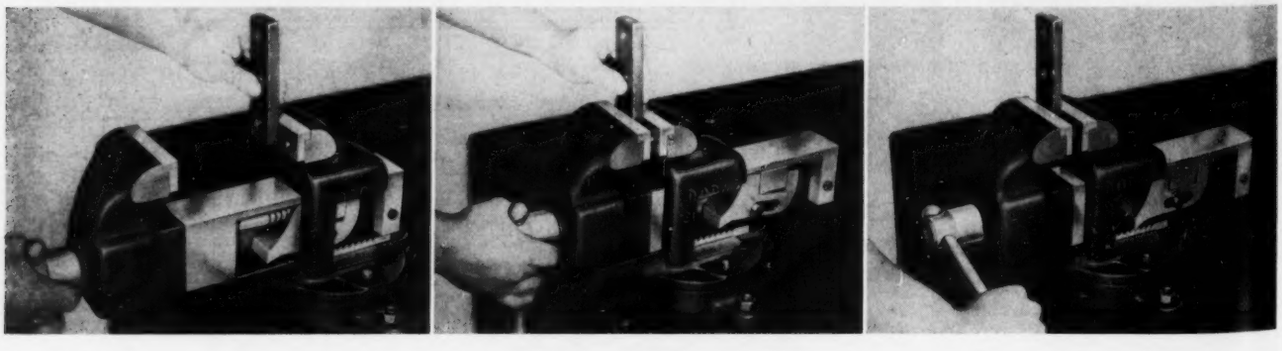
Spinning and Skinning Eliminated by New Vise

A piece of equipment common to every manufacturing establishment, large or small, is the vise. In many years there have been relatively few changes in its design. Feeling that there was room for improvement in design, that its efficiency could be improved and that one size could meet most requirements, Dodge Mfg. Co., Mishawaka, Ind., developed and is introducing the Slide-Set vise.

A turn and a half of the handle in a counter-clockwise direction places the jaw in a "neutral" position. From that point it slides to any position, eliminating spinning of the handle for gripping the work. Once the work is engaged, the vise operates in the conventional manner.

Another feature is a no-pinch handle that protects the operator against blood blisters between the thumb and forefinger. Made with either a swivel or stationary base, the vise is offered in a 4-inch size only. Parts are made of high strength steel and semisteel castings.

Action of the new vise, as shown in photographs of a cutaway model, is said to take approximately 1 second in opening or closing. After turning the handle to the left, vise is in this neutral position (left photo), ready for rapid sliding in either direction. A push closes the jaws on the work (center photo); or a pull will open them. Once the jaws contact the work (right photo), a clockwise turn of the handle applies the full pressure in a conventional manner. Notice that in left and center pictures the handle is in such a position that the hand between the thumb and forefinger is not being pinched.



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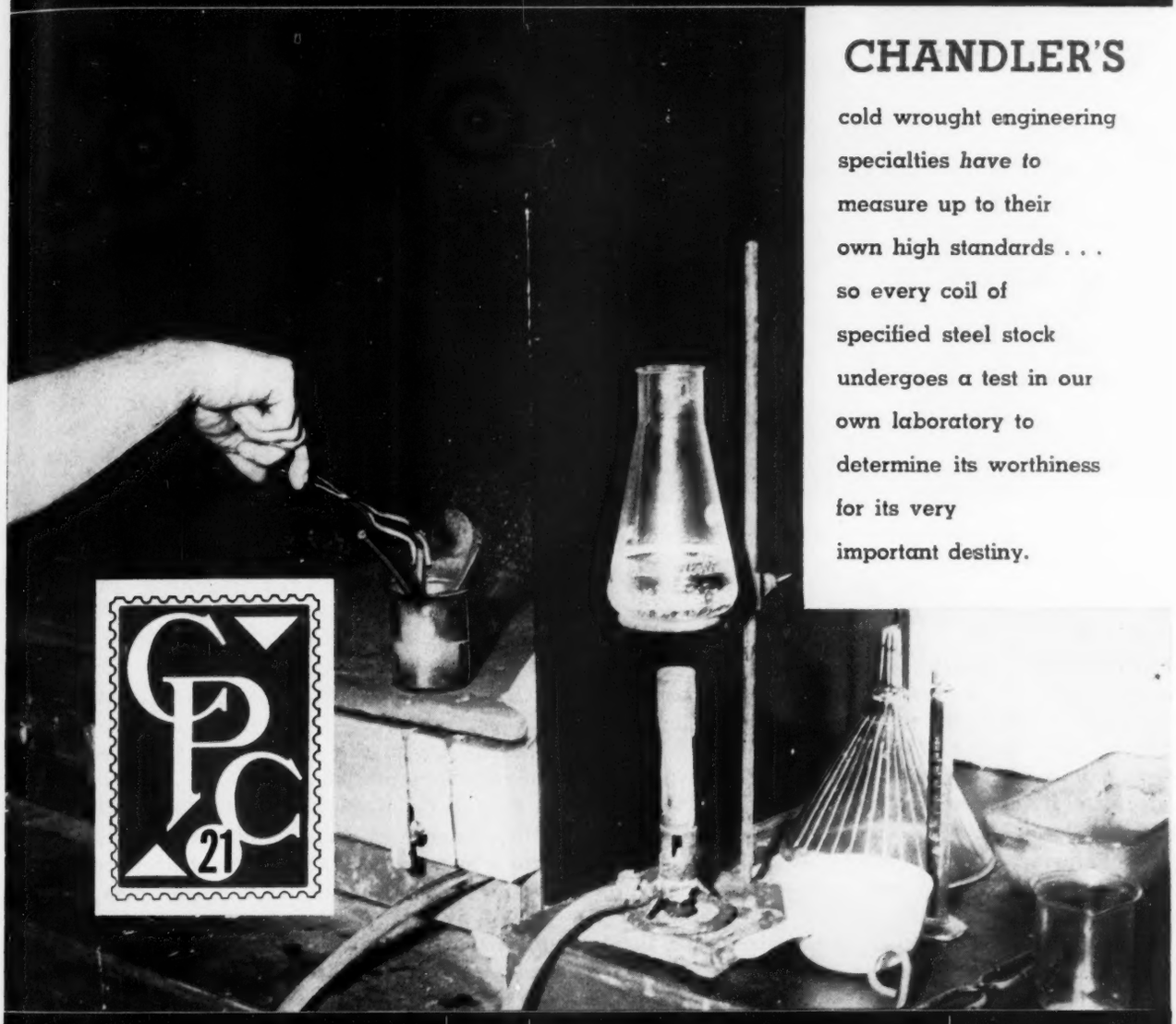

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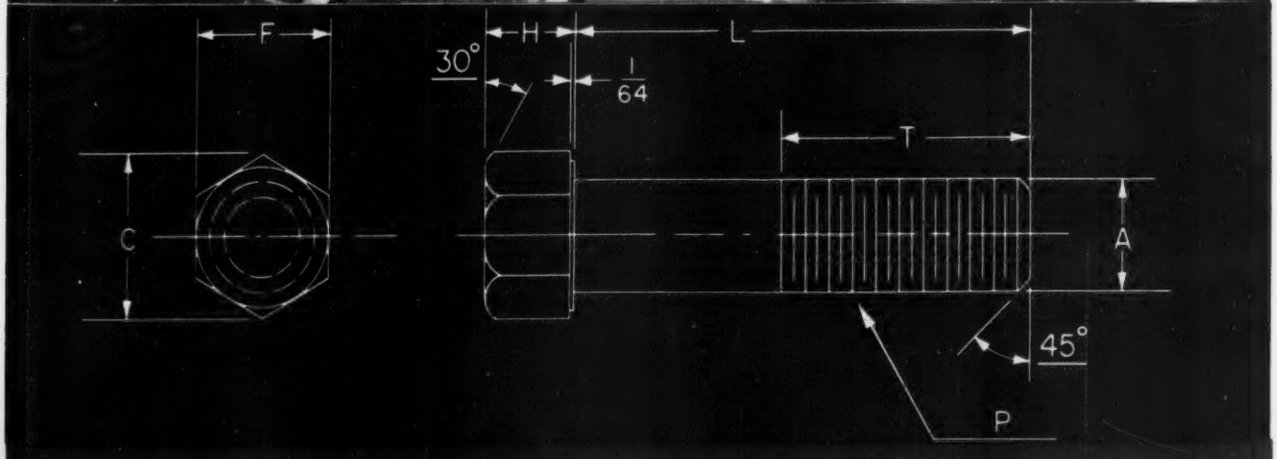
cold wrought engineering specialties *have to* measure up to their own high standards . . . so every coil of specified steel stock undergoes a test in our own laboratory to determine its worthiness for its very important destiny.



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Wiremakers Evaluate New and Existing Facilities

This single-draft wire drawing machine operator uses a micrometer to check diameter of wire leaving die box

IMPORTANT possibilities of prestressed concrete construction as a new market for high-carbon wire were pointed out to wiremakers attending the 21st annual meeting of the Wire Association, Lord Baltimore Hotel, Baltimore, Oct. 23-26. Other papers presented at the meeting covered handling, finishing, testing, cleaning and coating of wire.

H. Fornerod, Preload Corp., New York, described the role of high-carbon wire in its application with concrete construction. He related how the wire is stretched to a predetermined initial stress and then covered with concrete. After the concrete becomes hard the wires are released and because of their bond with the concrete, the shortening of the wires causes compression in the concrete. Thus the concrete is precompressed and the steel is prestressed.

Another Variation—Similar results, he says, can be obtained by first pouring a concrete beam with a longitudinal hole near its lower fiber. After hardening a number of steel wires are introduced into this hole and stretched a predetermined amount and then anchored at the ends. The force in the cable is transferred to the concrete which, in turn, is brought into compression. The hole in the beam then is filled with grout. This method is known as poststressing.

Use of high-carbon wire steel with a 0.2 per cent yield point of over 200,000 psi, makes it possible to allow in the design for a sufficiently large stress loss. For poststressing methods and using high-carbon wire for girders a stress loss allowance of about 25,000 psi is sufficient, thus leaving 125,000 psi as an actual working stress. One of the important characteristics of a prestressing wire is its ability to permanently remain under constant tensile stress when kept at constant elongation and after elastic deformation and the so-called immediate plastic deformations have occurred.

Handling Cuts Cycles and Costs

J. E. Wiltrakis, assistant superintendent, factory planning, Western Electric Co., Kearny, N. J. and **A. A. Bureau,** department chief, material handling, Chicago.

Consideration is given to methods and costs of transportation of copper from suppliers and efficient intermill handling of materials. Utmost economy of movement and maximum utilization of floor space are factors in maintaining low operational costs.

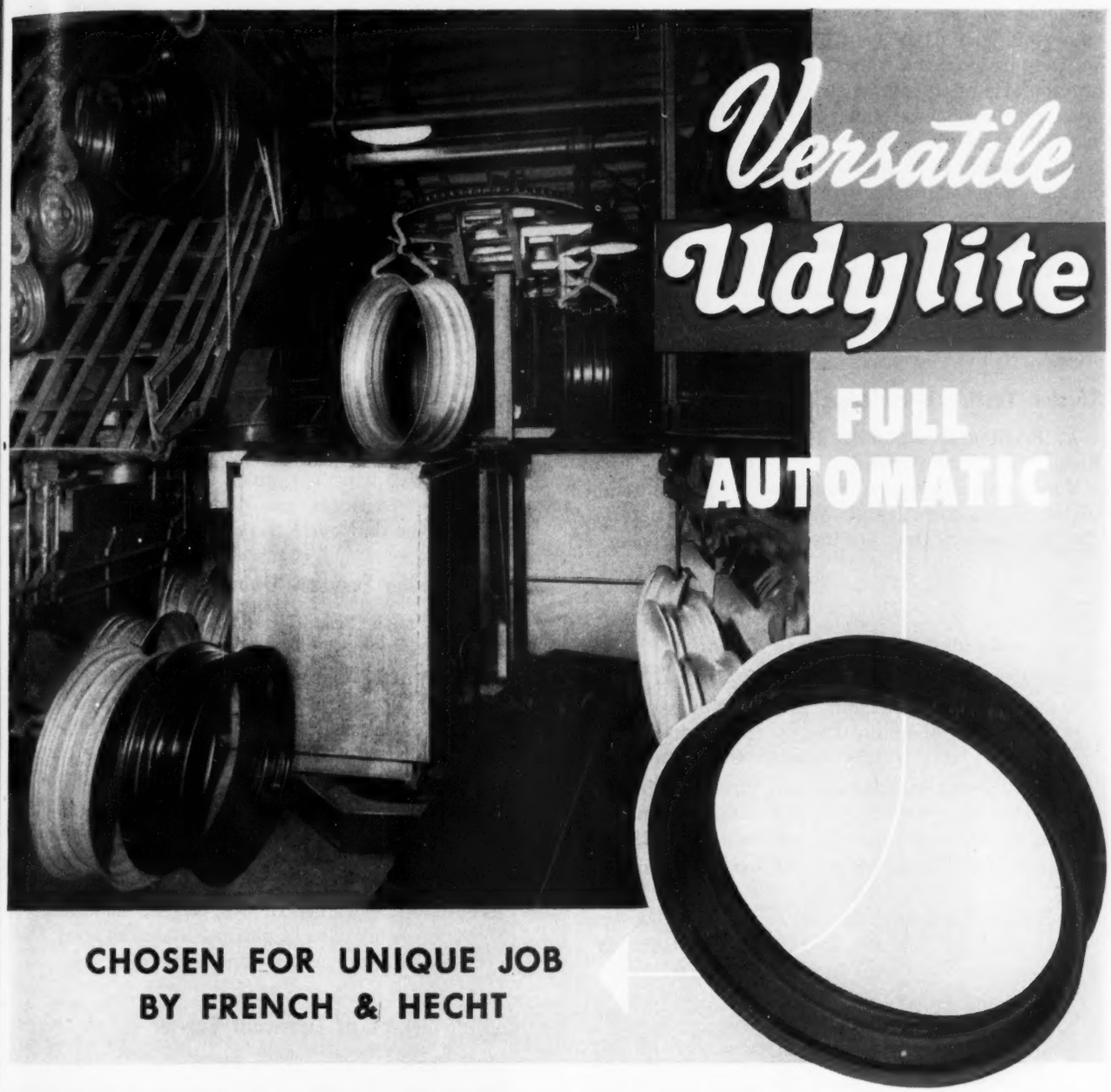
Industrial truck and floor-operated cranes equipped with a hair-pin hook are used to deliver rods to storage. Movement in and out of wash tanks is accomplished by 2-ton electric tramway hoists. Quantity production of few sizes of wire, high-speed machines and large spools of wire and improved handling methods and equipment are contributing factors in reducing time cycles between operations and in improving utilization of space.

Storage Method Facilitates Grading

A. F. Anjeskey, sales manager, Cleveland Tramrail Division, Cleveland Crane & Engineering Co., Wickliffe, O.

Vertical storage of rods by using an expanded hair-pin hook and carrier system facilitates keeping sizes, heats and alloy grades separate, and provides more storage per square foot of area and at less total cost. No end clearance and coil setback of the pile is necessary in the bins to provide hook space and thus greater net area is available for storage. About 80 per cent of the total area can be used as a net area. A truss height 40 feet above floor level provides for efficient vertical storage. The cost is less than the cost of a lower truss height.

"Power Packed" Hook—The stacking hook is operated hydraulically with an electrically-operated motor pump incorporated in the body piece of the hook. The



CHOSEN FOR UNIQUE JOB BY FRENCH & HECHT

Plating huge tractor wheel rims is quite an assignment for a standard model full automatic machine. But French & Hecht Division of Kelsey-Hayes Wheel Company reports splendid results with their Udylite equipment. This unique installation is just one example of the many varied applications of standard Udylite Full Automatics. They're being used to plate everything from cuff links to Diesel engine parts—in every type of finish—with every type of process.

The chances are that Udylite equipment is just what *you* need to answer *your* plating problem. Why not call in your nearby Udylite Technical Man today and let him tell you what Udylite equipment can do? Like many other companies, you may find the Udylite way the sure way to greater profit and lower per-unit cost in any metal finishing operation. Or write direct to The Udylite Corporation, Detroit 11, Michigan, for complete information. There's no obligation.

PIONEER OF A BETTER WAY IN PLATING

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

underside of the pin is expanded after being inserted in a unit load of 10 coils. Individual coils are held on the pin by barbs which also enter the end coil on the top side of the pin as the mechanism is expanded, when retracted, these points clear, presenting a smooth pin for entry into a new unit load. The stacking unit handles coils 36 inches OD and 25 inches ID to a maximum of 52 inches OD and 36 inches ID.

The load can be transported in the horizontal position until storage is reached when it is tilted to the vertical and lowered into the stack space. The mechanism then is retracted and the empty hook raised. The vertical hook also can be used for horizontal storage in areas where this type storage is necessary.

Torsion Testing Knowledge a Must

L. R. Steuer, superintendent of tests, Bethlehem Steel Co., Williamsport, Pa.

Torsion value usually is represented as the number of turns in a gage length equal to 100 diameters of the specimens. One of the principal purposes of torsion testing is to check the ductility and the uniformity in toughness of the wire.

Ductility in rope wire is important because after the wire is fabricated into a rope it must have enough life remaining to withstand continual cold work, wear, abuse and fatigue strains set up in the rope as it travels under heavy loads over the sheaves and around the drives during its life of service. Torsion testing is important in determining the ductility of steel wire rope but it is open to misinterpretation unless results obtained are studied with a knowledge of its limitation.

Annual Meeting Date Changes

EFFECTIVE 1952, annual meeting of the Wire Association will be held early in November to afford its membership the opportunity to attend the Society for Metals show in October.

Next year's meeting of the Wire Association will be held at the LaSalle Hotel, Chicago, Oct. 22-25, and the 1952 convention at Hotel Carter, Cleveland, during the week of November 11.

Regional meetings for 1951 are scheduled for Los Angeles, Atlanta, and Hamilton, Ont., as announced in the Oct. 30 issue, STEEL, p. 30.

Truck, Cranes Simplify Wire Pickling

R. H. Hertzog, John A. Roebling's Sons Co., Roebling, N. J.

Sulphuric acid for pickling steel outranks all other grades from the cost standpoint. Wire at the Roebling plant is handled in and out of the pickling department by boom truck, and over the line of tanks by overhead crane. Sulphuric bath of 5200 gallons is heated by live steam and the boric acid solution by steam coils. Acid consumption ranges from 29 to 40 pounds per ton of steel cleaned.

Initial strength of the sulphuric acid bath is 7½ per cent by volume. Once the solution is made up no acid is added. Spent acid is conveyed to a pit containing wire scrap where it is neutralized and shipped to an outside company for the recovery of iron. Spent acid when dumped contains 3½ per cent iron and 4 per cent acid. About 48 hours are required to neutralize the free acid.

Surface of the wire is dull coated by spraying with water from nine to 15 minutes. The product then is allowed to drip from the same period of time and finally is dried by a blast of warm air. From the drying rack the wire moves to the borax tank where it is given a single dip and then transferred to the drier. Wire to be lime coated is given one dip in the lime tank, air dried, given a second dip, transferred to the drip rack, given a third dip and finally transferred to the drier. About 20 minutes are involved in the time cycle.

Salt Cleaning Easy on Stainless

H. C. Smith Jr., Wilbur B. Driver Co., Newark, N. J.

Loss of metal approximates 1 per cent in the operation. Salt pots are heated by three rows of gas burners. Molten salt is employed for cleaning stainless as well as for desanding and descaling castings. An exhaust system is recommended in the quenching building.

The heavier the scale, the easier it is to blow off in the quench. While the salt bath is expensive as to equipment, the saving in metal loss when processing stainless steel makes the process advantageous. If acid can be avoided in pickling stainless steel, about 4 per cent of the metal can be saved.

Coating Serves as Lubricant Carrier

J. Leland, Parker Rust Proof Co., Detroit.

Stainless steel wire first is pickled, immersed in the phosphate coating solution which is maintained at 120° F, rinsed twice, blown dry and then taken to the benches for dry drawing.

Advantages of phosphate coating stainless steel wire include easy application, short time cycle, suitability for all commercial alloys and improved surface finish. More efficient control of pickling methods has resulted when stainless wire has been phosphate coated. The coating serves as a carrier for the lubricant though it is not hydroscopic. When processing 18-8 stainless wire it is not so much the cleanliness of the wire as it is the surface condition that claims importance.

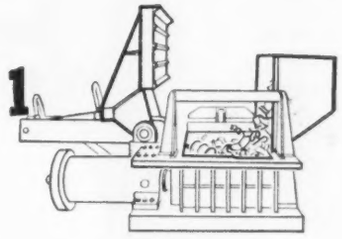
New Finish Withstands Cold Heading

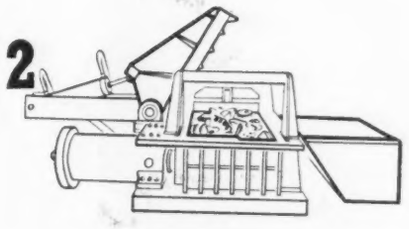
W. Hill, Jr. Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

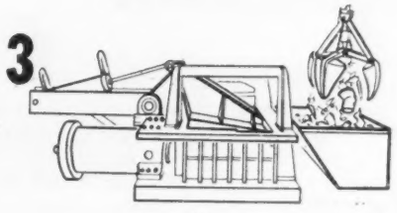
A new finish may be produced on wire which is interchangeable on all types of cold heading machines and which will not flake off during upsetting nor

ffer You The Nearest Thing Available o "Automatic" Scrap Metal Baling

Never in the history of mechanical scrap metal baling has one line of presses played such an important role in cutting scrap handling costs as have the Dempster-Balesters. These high speed presses, engineered for top production and low cost operation, are making scrap metal baling highly profitable. In only ten years hundreds of Dempster-Balesters have been installed in 168 cities in 40 states . . . in addition to 13 foreign countries. Without question, Dempster-Balesters are the most economical, most efficient presses baling scrap metal today!







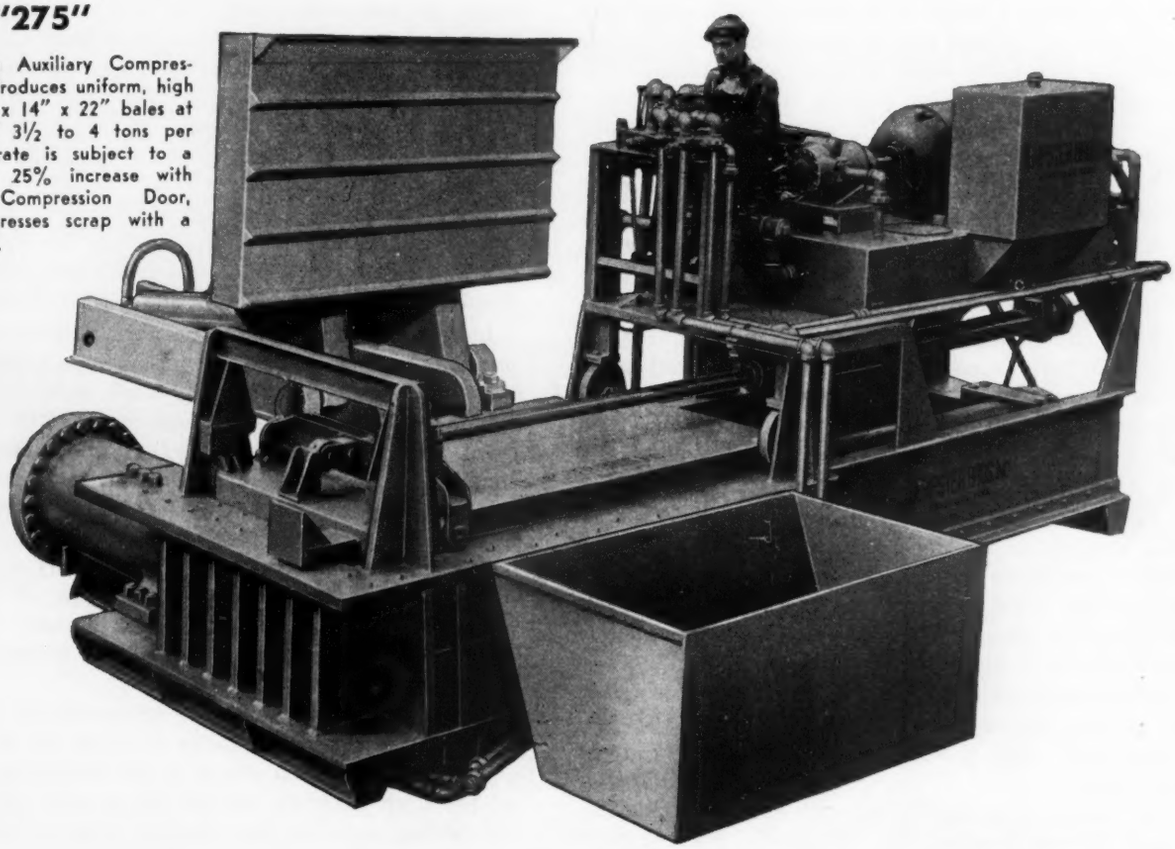
AUXILIARY COMPRESSION DOOR INCREASES BALING PRODUCTION 25%, OWNERS REPORT

With the hydraulically actuated Auxiliary Compression Door, shown below on Model "275", every phase of the baling cycle is automatic from the moment scrap metal is dumped into Skip-Pan Loader until finished bale is ejected. Skip-Pan is standard equipment on all Dempster-Balesters. Users report a conservative 25% increase in production and as much as a 40% reduction in cost per bale with the compression door. Compression Door is available for all Dempster-Balester models. Detail drawings at right show the 1-2-3 production punch of a Dempster-Balester with Auxiliary Compression Door and Skip-Pan Loader. 1—Skip-Pan dumps scrap metal into charging box. 2—Skip-Pan returns to loading position as door begins compression stroke. 3—Door compresses scrap—usually with one stroke, permitting charging box door to be closed without further arranging. During baling cycle Skip-Pan is reloaded and charge dumped into box as soon as bale is ejected.

Write today for your copies of the folders on the Dempster-Balesters. A product of Dempster Brothers, Inc.

ODEL "275"

Shown with Auxiliary Compression Door. Produces uniform, high density 14" x 14" x 22" bales at the rate of 3½ to 4 tons per hour. This rate is subject to a conservative 25% increase with Auxiliary Compression Door, which compresses scrap with a 45-ton force.



6110 DEMPSTER BUILDING, KNOXVILLE 17, TENNESSEE

New Flexible Roof Construction Cuts Furnace Maintenance Cost

Mechanical spalling is reduced by a system of control built into each arch unit to compensate for differential expansion of refractory elements

This double-hung refractory arch unit is being loaded to destruction. A lower tile in the 3-inch wide assembly snapped under a load of 675 pounds . . .

. . . After failure of the arch, notice how the load was eccentrically supported from the lower tile to give the maximum amount of outward pull

INTERESTED in reducing your steel mill refractory and maintenance costs—securing less down-time for arch repairs? A new double-hung "pendulum action" insulated refractory arch designed and produced by George P. Reintjes Co., Kansas City, Mo., may be your answer. Besides reducing refractory shapes carried in inventory, the new type roof construction is sufficiently flexible to be attached to existing steel framework, regardless of its warped or twisted condition. It can also be attached to framework designed and used for any type of suspended arch with very little structural change.

The double-hung arch is designed particularly for steel mill furnace roofs. Tiles are movably suspended from tubing attached to overhead beams or girders. They can swing freely as a pendulum, thus they don't depend on rigid buckstays or immovable sidewalls to hold the arch in position.

Lock Does the Trick—The arch consists of upper and lower tiles; the upper is long enough so the arch can be insulated without excessively embedding the supporting metal within the heated areas. The device holding the upper to the lower tiles is a patented horizontal S lock. With it, the arch tiles cannot become disengaged, even though they swing as much as 80 degrees from the vertical. The lock also prevents tiles from becoming disengaged by an upper movement.

In designing a supporting arch for steel mill furnaces, it was realized that frequently arch supporting girders warp, twist and sag. In many cases it is necessary to replace the beams before the arch can be reinstalled. Since the double-hung arch supporting tubing is suspended from the steel framework by the use of eye or U-bolts, and since each refractory tile unit is individually suspended, no definite spacing between beams is required. The adjustment of an eye bolt aligns the arch regardless of the condition of the steel and also disregarding the spacing of these girders.

The arch can be suspended from any overhead framework, even though the girders are spaced as much as 6 feet apart. This makes it almost universally adapted for reroofing existing steel mill furnaces.

Individually Hung Tile—The same principle of suspension is incorporated in the single hung arch that has been so successfully used in thousands of boiler and furnace installations since 1932. In this case, each tile is individually hung. The maximum cumulative length of supporting metal embedded in the refractory or in direct contact with the refractory is only 2¼ inches. This length limitation of metal embedded within the refractory not only eliminates cumulative growth but prevents sagging of the arch and the consequent escape of heated gases—a prime factor in the excessive heating of the overhead steel supports.

The fantail arch nosing is supported at only one point. This support acts as a hinge so when accumulative expansion occurs in the horizontal portion of the arch pressing against the nosing, the nosing can swing outward and upward, thus avoiding mechanical expansion strains.

Required: Only Three Components—The single hung

lift trucks are sensitive, too

The lift truck driver who judges tires by the seat of his pants isn't far wrong, cost-wise. Mono-Cushions will save you plenty on repairs by giving your trucks (and drivers) an easier ride than any other type of industrial tire, size for size. They'll drastically reduce maintenance on steering mechanisms, bearings, differentials, universals, transmissions—any part of the truck affected by shock or shock load.

Mono-Cushions will cut costs in other ways, too. They're long-wearing, they need no servicing, and they're puncture-proof—go anywhere in the plant. They're easy on loads, easy on floors. They're stable, sure-footed.

The leading manufacturers of industrial vehicles use Mono-Cushions as original equipment. Replacement tires available through the manufacturer of your equipment or his distributors.

Mono-Cushion
INDUSTRIAL VEHICLE TIRES

TOUGH ALL THE WAY THROUGH

CUSHION ALL THE WAY THROUGH

THE
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SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

arch nosing can be built up of segments having an increment of 30 degrees, thus any nosing from 30 to 240 degrees can be built with one refractory shape and two shapes of castings.

The double hung nosing is built up of segments—each segment is an increment of 7½ degrees. Thus the fantail nosing can be built up to 180 degrees or a semicircle in multiples of 7½ degrees with but one shape of lower refractory, one dogbone tile and two shapes of arch supporting castings.

Tin-Zinc Alloy Can Replace Cadmium

SINCE announcement by Tin Research Institute of Great Britain several years ago that the plating of tin-zinc alloys appeared to have promise as a less expensive substitute for cadmium, experimentation has been going on in this country. Now that an acute shortage of this material has suddenly developed in the United States, the electroplating industry has been casting hopeful glances at the development.

As the cadmium shortage was felt earlier in England than in the United States, the new type deposit gained its first acceptance there and is being regularly applied in several large installations in regular production. Investigations in this country indicate that the claims for the unusual properties of the tin-zinc alloy deposits are true and that the plating could offset to a considerable degree the critical cadmium situation.

Limit Not Too Critical—A whole range of tin-zinc alloys can be plated, but according to Metal & Thermit Corp., New York, the most desirable one appears to be 80 per cent tin, 20 per cent zinc, with a tolerance of about 2.5 per cent either way. It is said that the limits are not critical as the properties of the alloys vary in a regular and gradual fashion as the composition changes. If too little zinc is deposited, the corrosion resistance suffers somewhat; if the deposits are too rich in zinc there is an adverse effect on solderability.

Deposits in the 80-20 tin-zinc range have an appearance similar to pure tin. The finish is satiny-white and of a matte nature. It is not bright in the usual sense of the word.

Properties of the Deposit — Three characteristics make the 80-20 tin-zinc deposit an attractive substitute for cadmium, as well as a highly satisfactory deposit in its own right. 1. Even without a flux, the deposit is easily solderable. This is said to give it an advantage over zinc and place it equal to tin and cadmium in this respect. 2. Corrosion resistance is excellent. Salt spray tests have shown that the deposit will out-perform zinc. Exposure tests show it to be equal or superior to cadmium in some environments. It is also reported to be less porous, thickness for thickness, than tin. 3. It offers the combination of corrosion resistance of zinc and the solderability of cadmium or tin in less than half the cost of cadmium, reports state.

As for its uses, the new plating proces has found its greatest acceptance so far in the electrical and electronic industries as a substitute for cadmium. It is believed applications of the alloy plate are commercially feasible in a radio and television chassis and parts, general industrial and automotive hardware, fire extinguishers and die castings.

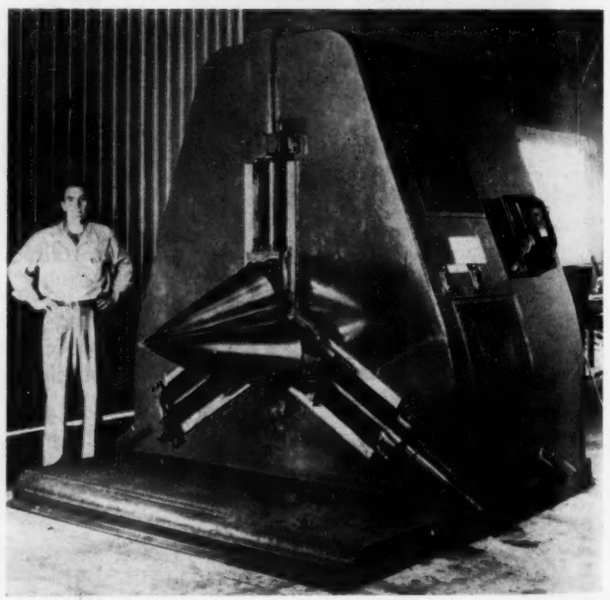
Keeps the Finger Off—The deposit can be improved further in corrosion resistance by a dip in 2 per cent chromatic acid solution, this imparting a passive film to the plate. It also tends to reduce the proclivity to finger-staining and is said to have little effect on solderability. The bath used for producing the deposit is basically the alkaline stannate tin bath, plus a small amount of zinc cyanide and larger quantities of alkali cyanide.

Anodes of the same composition as the deposit are used: 80 per cent tin, 20 per cent zinc. Anodes must be filmed, like tin anodes and the same precautions against stannous or bivalent tin entering the bath as in tin plating must be observed, Metal & Thermit reports. The stannous or bivalent tin may be oxidized with peroxide when present.

Conditions and Control—Working voltage is within the range of 3.5 to 4.5 volts, lower voltages usually indicating unfilmed anodes. No special precautions are required in cleaning before plating, but the work should be in clean condition when it enters the bath, as in any other plating process.

It has been found that welded mild steel tanks are suitable. Linings capable of withstanding the action of the solution may be used, due to the cyanide content of the bath. Ferrocyanides will form in time; however, it is not known whether this constituent

Rolls Cones Almost to Point



Currently being used in the jet engine program for producing cones and conical shapes to almost a complete point at the small end is this cone-rolling machine. It employs three conical-shaped rolls mounted in cantilever design, each driven by an independent motor and adjusted independently by separate motors. Built by Reed Engineering Co., Carthage, Mo., the machine's rolls can be set in any position from full parallel up to a 45 degree included angle. Actual forming rolls are of the interchangeable type and can readily be changed from the front of the machine

is definitely harmful and its accumulation will be so gradual that only experience over several years of operation will provide an answer.

Temperature should be controlled to within 5° of 150° F. Free caustic is best controlled within about 0.15 oz/gal; the cyanide may vary considerably more than this, provided it is above the minimum of about 5.7 oz/gal.

Zinc and tin content of the bath need not be controlled as closely as the caustic and cyanide, though the zinc content, being very small, should not be allowed to fall too low. The company advises that caustic and cyanide contents should be checked daily; metal content checked weekly.

There Are Disadvantages — Development up until the present time has not succeeded in making the deposit as bright as cadmium or zinc which have been bright-dipped. The finished product is said not to be unpleasing in appearance, resembling electroplated tin.

Control of an alloy plate is always more difficult than control of that of a single metal. When both metals of the alloy are white the process cannot be controlled by color. Therefore an analytical method must be used. It is said that any shop with routine laboratory facilities should have no difficulty in carrying out the necessary analyses.

A-1 Steel from Low Grade Coke

"LOWER GRADES of coke, containing more sulphur, may now be used for making even the highest grades of steel"—so stated Dr. James R. Killian, Jr., president of Massachusetts Institute of Technology, speaking before an alumni group at Birmingham.

Reporting on current research and educational activities at the institute, he said that recent research first sponsored by Republic Steel Corp. and now also by American Iron & Steel Institute in the MIT metallurgy department, has established the fundamental chemistry of sulphur in steel furnaces. The work gives assurance that brittleness arising from sulphur in steel can be controlled in steelmaking processes.

Citing the work of an MIT student and faculty research group under direction of Prof. John Chipman, head of the metallurgy department, Dr. Killian said that this research, "including what is believed to be the first equilibrium study of the distribution of sulphur in blast furnaces, has for the first time put the theory of steel desulphurization on a sound basis."

Slag More Than Floats—They found first details of some of the chemical reactions between slag, which floats on the molten metal in a steelmaker's furnace, and the steel itself. The slag, which is more than merely a waste product, is used to absorb impurities and is the means by which to increase the quality of the product. After the impurities are absorbed into the slag, it is skimmed off before the metal is poured.

Why in some cases did this slag appear to absorb sulphur more effectively than in others? To find the answer required a detailed study of all the variables which enter into the chemistry of steelmaking.

In both the blast furnace and the basic electric furnace, a common chemical compound of iron and oxygen—iron oxide—was found to hold the principal key. Slag from which this compound is largely eliminated absorbed sulphur entering the molten metal from coke and resulted in high-grade output.

Hundreds of Tests—Studies were made in four different small electrically heated furnaces specially designed to duplicate with a high degree of accuracy, the chemical reactions found in even the largest steel mills. In each case, metal and slag were heated to temperatures about 2900 degrees above zero.

In all, the research has involved nearly 500 individual tests of the reactions between slag and metal. The results were obtained through precise chemical analyses of both metal and slag samples taken at three different temperatures during each test run.

The same methods of study have been applied in most methods of steelmaking including blast, open hearth, or electric furnaces, the research team reported.

May Mean Lower Grade Coke—More than 90 per cent of the sulphur in pig iron is present because of transfer from the coke used in blast furnaces. The importance of the MIT research, is that by providing an understanding of the chemical reactions which

Towed in Train, Then Stacked

Here is a new type dolly rack that can be conveniently pushed by hand in assembling individual orders, then towed in trains to the loading area. Designed by Equipment Mfg. Inc., Detroit, racks are stacked to concrete floor space until the carrier is ready to receive the shipment. Features include self-centering stacking caps which permit stacking the load racks to the limits of truck reach or ceiling and a towing hook which keeps the unit even in long trains

control sulphur, it will make possible better methods of control leading to the use of lower grades of coke.

Diminishing supplies of first-grade coking coal in the United States make the development promising to our steelmakers. The same problem exists in Europe in a more critical stage, and there is the possibility that the current MIT work will find its most enthusiastic reception there.

But, Dr. Chipman stresses, although these new principles relate to fundamental steelmaking processes, there is much development work to be done before they may be directly applied by steelmakers. The educational benefits derived by graduate students active on the program, as well as those reflected to the undergraduate teaching in the department of metallurgy, have been an equally important result.

Handbook on Liquid Metals

Expected to encourage use of liquid metals in various industrial applications and thereby to increase the number of technical personnel trained to work in a relatively new field is a 194-page *Liquid Metals Handbook*. Published under the joint sponsorship of the Atomic Energy Commission, the Office of Naval Research and the Navy Bureau of Ships, the fundamental information contained in it is of particular interest to reactor designers. It is available from Superintendent of Documents, United States Government Printing Office, Washington 25, D. C. for $1.25.

Information is compiled on metals having low melting points so that they become liquid at room temperature or within a few hundred degrees of it.

Torque Converter Parts Shrink Fitted

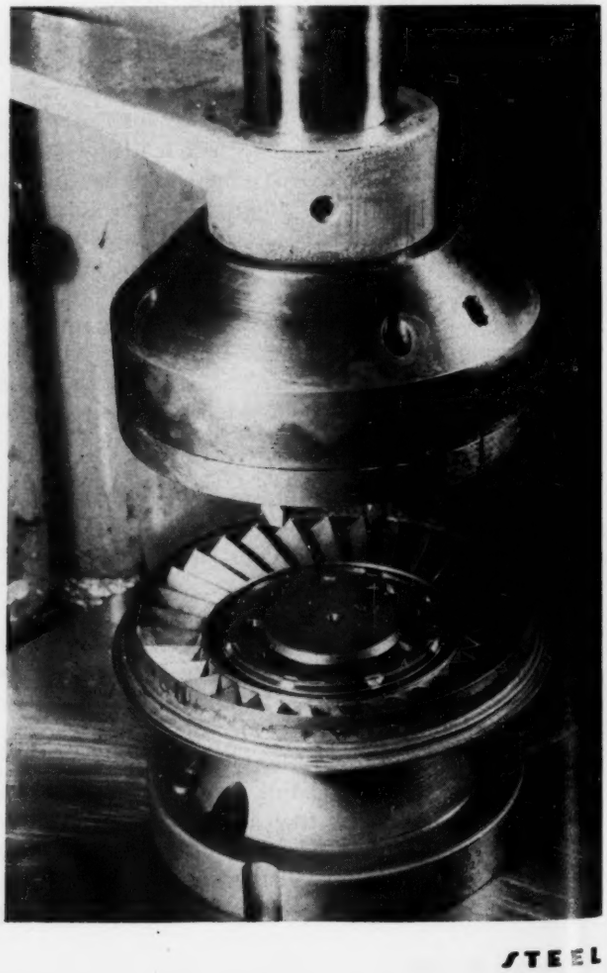
TIGHT fit between cams and the three smallest vaned members of Chevrolet's new Powerglide transmission is insured by shrink fitting. Vaned members are oven-heated to 300° F and the cams cooled to 20° F in a refrigerator before the mating parts are assembled in a small hydraulic press.

A tight fit occurs as the cam warms up and expands while the wheel cools and contracts. The combination of press and shrink fits is better than either alone and makes soldering and welding unnecessary.

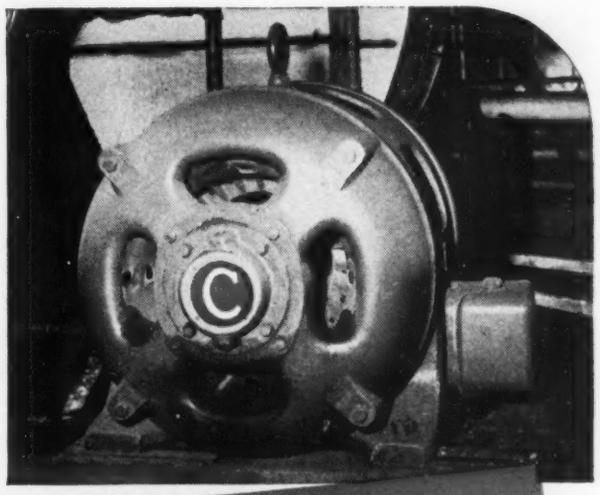
As an extra precaution, staking punches are used in a duplicate press to form portions of the inner rim of the outer parts into notches previously cut in the outer edge of the cam. This forming results in a positive lock between the mating parts and is accomplished simply and fast.

In this light press, a chilled cam hub is placed inside a heated vaned member. Next the press ram is lowered, pressing the parts together. As the hub warms, it expands; at the same time, the wheel cools, insuring a tight fit between the two parts

After the cooled cam has been pressed into the heated vaned member, staking punches, two of which can be seen, force parts of the inner wheel rim into notches in the cam, forming a positive lock between the two elements

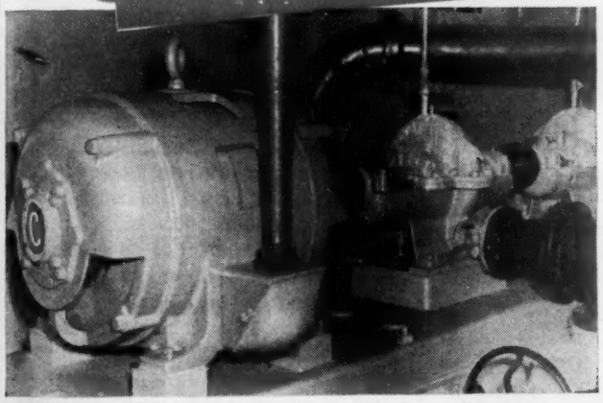


Century 40 horsepower, type SC motor driving an induced draft fan for a stack.

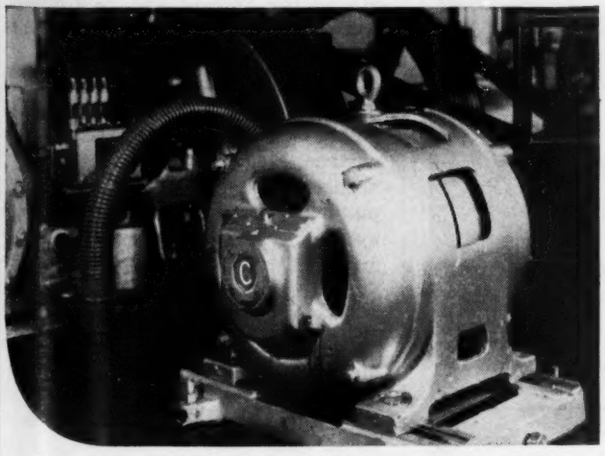


From Century's Line of Electric Motors You Can Select

1. **Right Kind**—*to match your current supply*
2. **Right Type**—*to meet your load characteristics*
3. **Right Protection**—*against atmospheric hazards*
4. **Right Size**—*from 1/6 to 400 horsepower*



Century 150 horsepower, type SC motor driving a two-stage centrifugal pump in a city water plant.



Two Century 75 horsepower SC high torque motors driving refrigeration compressors.

The wide range of kinds, types and sizes of Century motors makes it possible to select a standard motor to meet the requirements of all popular applications.

They are available for both AC and DC current—high, normal and low torque characteristics. Types are also available for applications requiring varying speeds and reversing direction of rotation.

To protect against atmospheric hazards, Century motors are enclosed in open rated drip proof, splashproof, totally enclosed fan cooled and explosion proof frames. Many types are available with vertical and flange mountings as well as standard horizontal bases.

Specify Century motors for all your electric power requirements.

Popular sizes and standard ratings are generally available from factory and branch office stocks.

Century C MOTORS

CENTURY ELECTRIC CO.
1806 Pine Street, Saint Louis 3, Missouri
Offices and Stock Points in Principal Cities

-624

Give Them Gleaming Corrosion Resistance And Cut Their Forming Costs

Here's new high-luster beauty for your products, plus true corrosion resistance—at lower forming costs. You get *all* these advantages from PERMACLAD STAINLESS CLAD STEEL.

PERMACLAD combines the surface characteristics of stainless and the easy forming qualities of mild carbon steel. You can cold-form PERMACLAD with ease—subject it to deeper draws without intermediate annealing—actually form it into products impossible with many other materials. Yet, even with the most severe draw, the percentage of cladding (usually 10% or 20%, but more or less if required) never varies. And the stainless layer remains inseparably bonded to its mild steel backing.

No change in equipment or practice is generally necessary to form PERMACLAD. You can shape it and weld it without difficulty. And because PERMACLAD is available backed with low-alloy, high-strength A.W. Dynalloy, you can build or use lighter sections without sacrificing strength. For less expensive, higher quality products, and attractive long lasting interior and exterior trim, design and build with PERMACLAD. The coupon below brings you full details in our free 8-page folder P-18.

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Other Products: A. W. ALGRIP ABRASIVE Floor Plate • A. W. SUPER-DIAMOND Floor Plate • Billets Plates • Sheets • Strip • (Alloy and Special Grades).

Converts to Diaphragm Plating

Possibility of converting existing plating tanks to diaphragm type operation without major expenditure has been made practical through a development of Automotive Rubber Co. Inc., Detroit. It can be installed in tanks where the size of the work permits and provides for the segregation of anode and cathode compartments by means of canvas duck screens.

Object is to produce smoother plated surfaces, allow higher current densities and eliminate polarization. Under the diaphragm system, anode solution is pumped off, filtered and passed to the cathode compartment free of insoluble metallics and organics which form at the anode and ordinarily deposit on the workpieces.

Conversion unit consists of fabric sleeves that slide on rubber insulated metal frames which in turn slide into insulated channels with the cathode side or work lane protected by insulated woven wire guards. Diaphragm converter sections can be constructed for tanks of any width, length or department with single or multiple work lanes, the company reports.

Face Plate Gives More Power

Designed for operations where increased power at lower speeds is desirable, is a new face plate drive for Giddings & Lewis horizontal boring, drilling and mill machines. Said also to provide greater flexibility for accurately machining hard-to-reach surfaces and unusual internal and external shoulders, offsets, grooves and recesses, equipment is being produced by Giddings & Lewis Machine Tool Co., Fond du lac, Wis., and may be applied to all machines in the company's line.

Tools, tool heads and special tooling setups may be rigidly mounted on the face plate or it may be employed for holding and rotating the workpiece while tools are mounted on the machine table and fed by the table movements. The face plate is 30 inches in diameter and equipped with eight radial T-slots on its working surface. Mounted permanently on the headstock of the machine, the face plate drive is engaged or disengaged by means of a built-in clutch mechanism. Shifting a hand crank on the back of the unit operates the clutch mechanism.

Heavy duty main spindle of the machine and the spindle sleeve extend through a hole in the center of the face plate, permitting the spindle to be used interchangeably with the face plate drive. The spindle is retracted in its sleeve when not in use.

The new face plate provides a 4 to 1 reduction from the spindle speed of rotation, with a corresponding increase in power. It is driven from the power or back gear shaft of the machine. A pinion on the end of this shaft drives an internal ring gear located inside the drum housing of the unit. The machine is equipped with an auxiliary high speed spindle; this is disengaged and retracted when the face plate drive unit is being mounted on the headstock.

Steel Founders' Design Booklet

Importance of correct design to assure satisfactory service and economical production of steel castings is brought forth in a new booklet, "Fundamentals of Steel Casting Design", available from Steel Founders' Society of America. It is a 32-page primer of fundamental practices useful to designer and foundryman alike.

Emphasis is directed particularly to considerations looking to reduced production cost, elimination of unnecessary weight, improved casting quality and castability. Major portion of the booklet is devoted to detailed discussion and illustration of accepted rules of economical and dependable steel casting design. Other sections deal with characteristics of the material, explicit reasons why design engineers should concern themselves with steel casting design, and elimination of possible defects through good design. It is available from the society, 920 Midland Bldg., Cleveland 15, O., for 20 cents.

Inert Packing is Frictionless

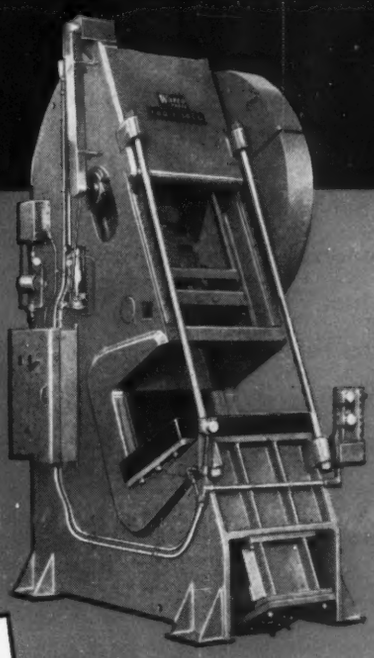
Frictionless and causing no wear on hydraulic valves, besides lasting much longer, are Chemlon v-rings, molded from Teflon. A development of Crane Packing Co., Chicago, the rings are chemically inert and reported to be unaffected by corrosive solutions. They are said to withstand temperatures up to 450° F.

Even at varying operating pressures, the rings insure a permanent seal with finger-tip pressure on the gland. They are supplied in numerous standard sizes from stock as well as in special sizes.

New Crane Added to Line

Wayne Crane Division of American Steel Dredge Co., Fort Wayne, Ind., is adding the model 40, 12½-ton truck-mounted industrial yard crane to its line of heavy duty equipment. Crane has an increased swing speed of 6.4 rpm and travels at truck speed. It is said to convert easily

2 Great Names IN PRODUCTION EQUIPMENT

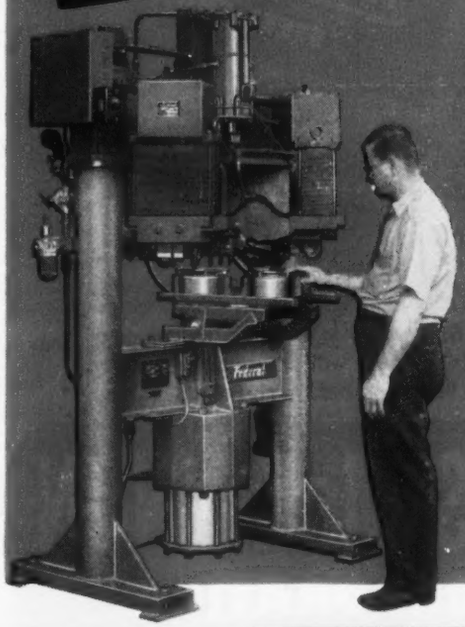


At Right—100 Ton Welded Steel Permanently Inclined Gap Press built by Warco for automotive stamping.

Below—Special Resistance Welder built by Federal for high speed production of automotive parts.

Warco®

Federal®



Federal has for many years been the pacemaker in Resistance Welders and Welding Equipment. More recently the Warco Press, built with the same ruggedness and exacting requirements that has made Federal First in Resistance Welding, has become symbolic of top quality mechanical production presses.

Today there are Federal Welders and Warco Presses operating in every major metal fabricating industry in the nation. And wherever they are operating users are getting long term performance, less down time, higher production and lower maintenance costs. Next time contact Federal. Representatives throughout the nation.

Federal® WELDERS

THE FEDERAL MACHINE & WELDER COMPANY
WARREN, OHIO

Warco® PRESSES

COULD ANYTHING BE MORE CONVINCING THAN YOUR OWN EXPERIENCE?
Then give HERC-ALLOY the toughest chain job in your plant. Our asking for this test reflects the confidence given us by HERC-ALLOY service records from industry's leading plants.
HERC-ALLOY
STEEL CHAIN

HERC-ALLOY is America's ***first alloy*** steel chain. For slings or other applications HERC-ALLOY Chain will prove that efficiency, safety and economy can go hand-in-hand.

COLUMBUS McKINNON
CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corporation)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

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Other Factories at Angola, New York, St. Catharines, Ontario and Johannesburg, S. A.

to all crane and shovel attachments. An auxiliary transmission provides ten forward and two reverse speeds. It will lift, boom, swing either simultaneously or independently. Upper works are enclosed in a weatherproof, inside-bolted cab which permits inside access to all deck machinery.

Will Measure 7000° Heat

Measuring of temperatures in destructive atmospheres, of large surface areas, where work moves or rotates, or where temperatures are above thermocouple range, is possible with a series of radiation instruments developed by Minneapolis-Honeywell Regulator Co., through its Brown Industrial Division in Philadoelphia. The Radiamatic series covers the range from 125 to 7000° F. It includes a low radiation pyrometer with calcium fluoride lens for temperatures from 200 to 1200° F, and intermediate series with a fused silica lens for 800 to 2300°, and a high series with a Pyrex lens for 1000 to 3200° F temperatures. Lenses are offered for either narrow or wide angles.

Another part of the series includes a low range model for measuring moving object temperatures from 125 to 350° F. A small target model for 1700 to 3200° and a very high model for 3000 to 7000° are also made, the latter for very small objects or a small area of large objects.

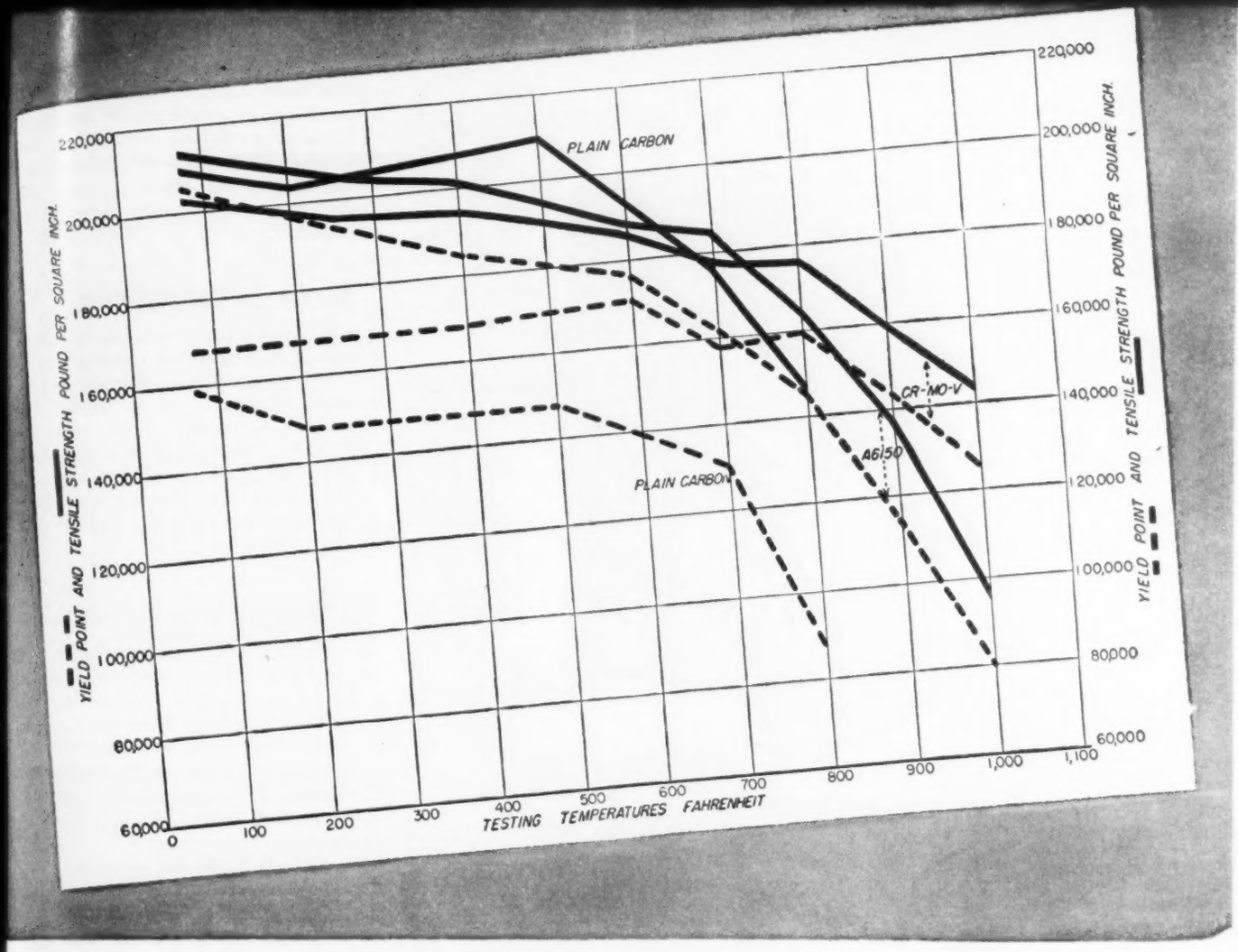
Welding Program for Defense

First of a series of technical manuals published by Eutectic Welding Alloys Corp., N. Y., is designed to assist national defense agencies and contractors in meeting the nation's industrial mobilization requirements by furnishing technical insight into welding. According to the company, manuals are being produced to provide broader understanding of important new developments in the welding science, with special emphasis on their applications to industrial mobilization for war, and on production and maintenance of war materiel.

Simplify Cylinder Design

Considerable time can be saved and design work simplified on air or hydraulic cylinders if templates are used. Ortman-Miller Machine Co. Inc., Hammond, Ind. is offering a complete set of such templates covering its line of cylinders.

Set is comprised of 8 sheets and is drawn to both one-half and full scales. Plan, front elevation and end elevation are included on all cylin-



HIGH TEMPERATURE PROPERTIES

of Cr-V and Cr-Mo-V Spring Steels

SPRINGS FOR SERVICE at elevated temperatures require steels which resist softening and lowering of the yield point. Unless hardness and yield strength are stabilized by correct alloy additions to the steel, these properties deteriorate rapidly as the temperature is raised.

The chart above shows the yield point and tensile strength of three types of spring steel at elevated temperatures determined by standard short-time tension tests.

Springs of plain carbon steel are sometimes used at moderately elevated temperatures, although their lower yield values prevent them from giving service as satisfactory as that of the alloy spring steels.

Chromium-vanadium steel springs, such as AISI 6150, give better service at ordinary temperatures because of the higher yield point. In addition, they may be used at operating temperatures up to about 700° or 750° F because they retain high yield point values as the temperature is increased.

Chromium-molybdenum-vanadium steel was especially designed for springs operating at temperatures in excess of 750° F. It can be used for springs operating at temperatures as high as 850° F or even higher under some conditions. At 800° F, the yield point of this steel is still greater than that of plain carbon steel at room temperature.

If you have a problem in spring applications at elevated temperatures, our metallurgical engineers will be glad to help you solve it.

MAKERS OF ALLOYS — VANCORAM BRAND — CHEMICALS AND METALS

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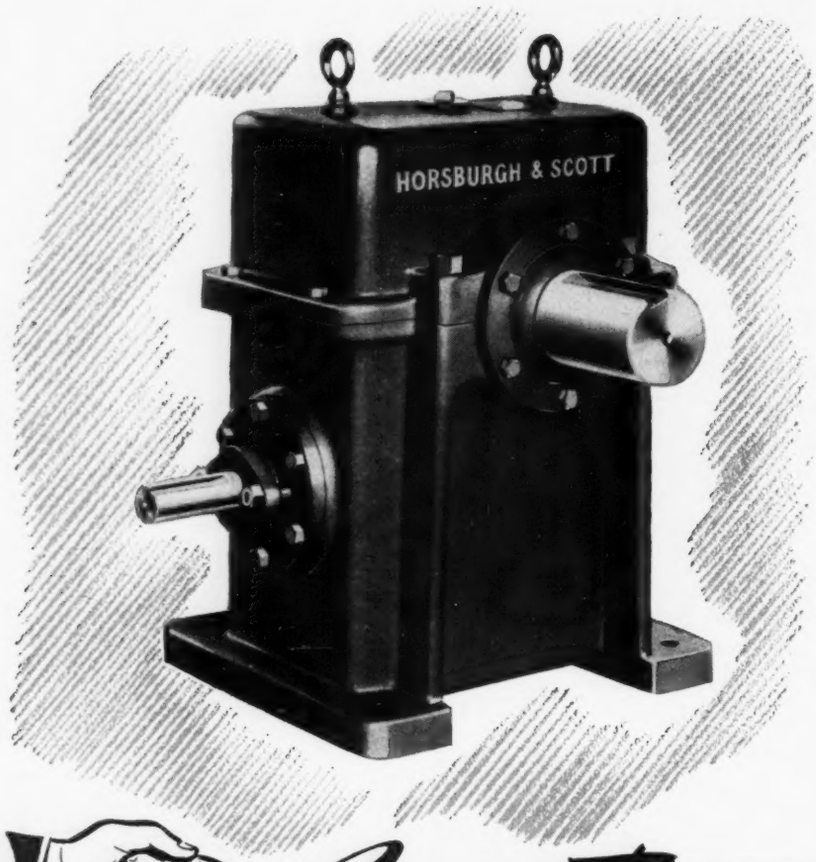


Compact

WORM GEAR SPEED REDUCERS

by Horsburgh & Scott

An important feature of Horsburgh & Scott Worm Gear Speed Reducers is compactness . . . reducer can be mounted as a unit on driven machines . . . making possible its use where other drives might interfere with aisles, walls or other machinery. Designed for simplicity with only two moving parts, this precision unit has 10 outstanding advantages and is obtainable in 8 types with reductions from 3⅝ to 1 up to 10,000 to 1 . . . right-angle drives available in ratios up to 700 to 1.

Send note on Company Letterhead for Speed Reducer Catalog 46

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND 14, OHIO, U. S. A.

ders from 1 to 8-inch bores; a full range of interchangeable mounting devices is shown. Templates are slipped into position beneath the designer's tracing paper or cloth and the required component parts are traced off.

Anodes for Electroplating

Tin and tin alloy anodes for use in the electroplating of tin and for the new tin-zinc plating process are being produced by Metal & Thermit Corp., New York. Three types are available: Pure tin anodes, high speed alloy tin anodes and tin-zinc anodes. The latter two are for tin plating and the depositing of a tin-zinc alloy, respectively.

1600 Small Holes Per Hour

Cashing in on high speed and flexibility of an automatic driller made by National Automatic Tool Co. Inc., Richmond, Ind., is an operation calling for drilling 1600 small holes in six faces of 50 plastic cash register drawers per hour. Hole sizes range from 0.098 to 0.199-inch in diameter.

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Nov. 27-29, American Standards Association: National standardization conference, Waldorf-Astoria Hotel, New York. Association may be reached at 70 E. 45th St., New York 17.

Nov. 27-Dec. 2, American Society of Mechanical Engineers: 19th National Exposition of Power and Mechanical Engineering and annual meeting, Grand Central Palace, New York. Exposition headquarters: Grand Central Palace, New York 17.

Dec. 1, American Iron & Steel Institute, regional technical meeting, Drake Hotel, Chicago. AISI headquarters: 350 Fifth Ave., New York 1.

Dec. 4-6, Electric Industrial Truck Association: Meeting, Hotel McAlpin, New York. EITA is located at 3701 N. Broad St., Philadelphia.

Dec. 5, National Welding Supply Association: Southeastern zone meeting, Hotel Patten, Chattanooga, Tenn. (Note next meeting)

Dec. 7, National Welding Supply Association: Southeastern zone meeting, Hotel Texas, Fort Worth, Tex. Address of association is 505 Arch St., Philadelphia 6.

Dec. 7-9, Electric Furnace Steel Committee, AIME: 8th annual meeting, William Penn Hotel, Pittsburgh. AIME headquarters: 29 W. 39th St., New York 18.

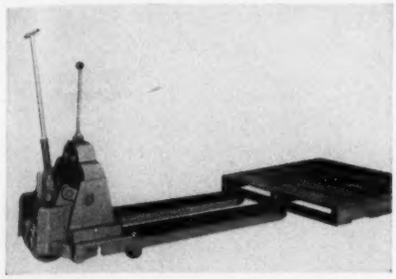
Dec. 13-14, Power Crane and Shovel Association: Meeting, Edgewater Beach Hotel, Chicago. Association address is 74 Trinity Place, New York 6.

Dec. 14, Cutting Tool Manufacturers Association: Meeting, Recess Club, Detroit. 416 Penobscot Bldg., Detroit 26, is association address.

New Products and Equipment

Pallet Handling Simplified

A pallet load-lift designed by Market Forge Co., 25 Garvey St., Everett, Mass., features wheels that automatically retract when the forks are in a lowered position. Built of aluminum alloy, the truck, supported on two front wheels and two auxiliary



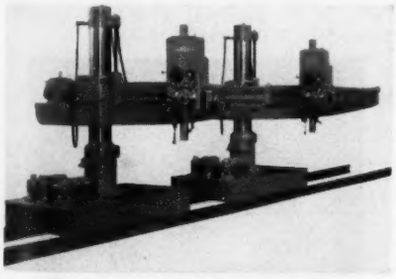
wheels on a short wheel base, turns in a small area. It will lift wherever a man can stand.

Rear wheels are 1-inch above the floor; they enter and leave the pallet without interference or damage to the bottom boards. Operating the lifting handle automatically brings rear load wheels down to the floor and raises auxiliary wheels. Rear wheels are closely centered and tandem articulated.

Check No. 1 on Reply Card for more Details

Radial Drill Has Added Flexibility

Riding on standard Cincinnati Gilbert horizontal boring mill runways or 100-pound rails with a 3-foot gage is a track-mounted radial drill offered by Cincinnati Gilbert Machine Tool Co., 3366 Beekman St., Cincinnati 23, O. Base of the machine is 46 x 90



inches. The unit carries all necessary power and electrical equipment completely enclosed. Traversing, clamping and coolant pump controls are mounted on the base and duplicated on the drill head.

Power traversing and clamping equipment is optional. Under power the unit traverses at 50 feet per minute. Both axles rotate in Timken tapered roller bearings and all mechanism operates in oil or is permanently lubricated. Clamps, located near each wheel hold the drill during operation.

Check No. 2 on Reply Card for more Details

Grinds Cutters, Mills, Etc.

Application in tool, die and machine shops, Kellering shops and other metalworking plants is expected for a cutter and radius grinder developed by Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford 1, Conn. Able to grind an infinite variety of milling cutters, end mills and other tools, its design

makes it quick to set up and easy to use. Longitudinal slides and cross slides on both the work holding unit and main spindle assembly plus a vertical slide on the latter, make for maneuverability. All movements are governed by locks and stops.

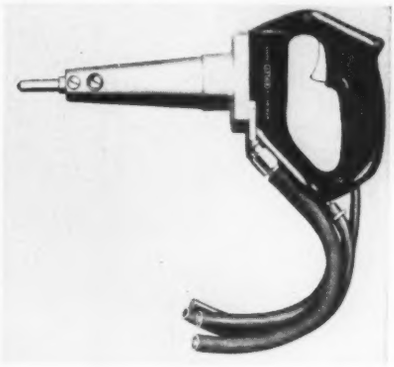
Provisions are made not only for conventional straight and spiral teeth but for various combinations of radii, angles and spirals encountered in die and mold making cutters. Machine is available in two types: R-6 with flute length capacity of 4½ inches and R-8 for flutes up to 10 inches long.

Check No. 3 on Reply Card for more Details

Gun for Explosive Rivets

Developed for high speed operation in blind, hard-to-get-at spots is a rivet gun for Du Pont explosive rivets, made by Ripley Co. Inc., Middletown, Conn. Its use requires no back-up, hammer, or bucking bar. With a single touch of the gun the rivet is set.

Tips of the gun are made of nichrome steel welded to a bronze base. Handle is a two-piece molded phenolic in which a handy off-on switch for easy manipulation is located. Gun

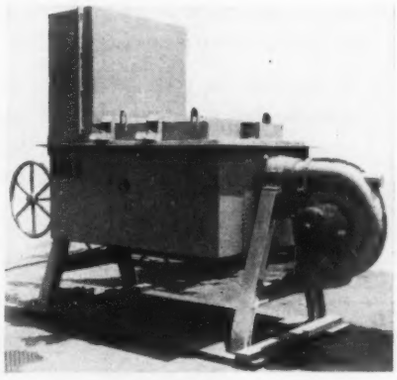


is ready for instant action on blind riveting and all conventional fastening jobs at the touch of a switch.

Check No. 4 on Reply Card for more Details

Furnace Produces More Heats

Capable of producing as high as 25 heats of brass and bronze and similar quantities of cast iron and alloys per day is a gas-fired melting furnace of 400-pound capacity, made by Reda Pump Co., Bartlesville, Okla. Melting time for ferrous materials has been found to be as low as 24 minutes, for nonferrous, 13 minutes. Advantages resulting from use include: No work necessary before starting as furnace is lit and melting



begins; mixing action in furnace is good for alloy work; tensile strength on iron is increased; heat is held to a minimum in the work area; less floor space is required.

Furnace is easily repaired and adjustment of atmosphere is relatively simple. Minimum tap temperature is 2850° F for gray iron and alloys and 2350° F for bronze and brass. Refractory life is increased, life of 300

"Certainly SAVES STEPS, Eh, Plunkett!"

Production slow?... Costs up?... Profits going for a ride?... All because your light metals fabricating takes just too many operations? Then, step up and meet pre-coated *THOMAS STRIP—one of the greatest production step-savers ever presented.*

★ ★ ★

Consider the many step-saving qualities of Copper Coated THOMAS STRIP, for example. First, it saves you steps by protecting parts in process against rust. And, this tightly adherent, uniform copper *pre-coat* speeds production in all tinning, soldering and brazing—often replacing more expensive metals for these operations.

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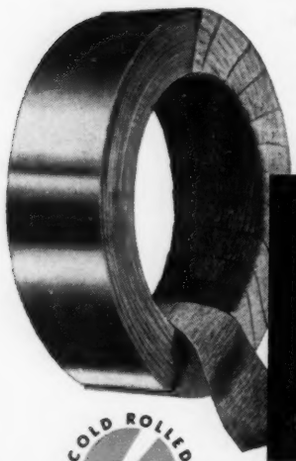
What's more, it is an effective die lubricant, and is manufactured in special deep drawing quality.

A test run in your plant on your equipment can develop many specific cases in which pre-coated THOMAS STRIP will save steps, speed production, cut costs. Write us for more information and for samples.



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and 1000 heats, respectively, for the two types of materials being expected. Furnace is not repeatedly charged; the whole charge is put in the stack at one time.

Check No. 5 on Reply Card for more Details

Prewired Furnace Panel

Use of a prewired furnace panel simplifies installation of the Temco line of electric furnaces, made by Thermo Electric Mfg. Co., 495 W. Locust St., Dubuque, Iowa. Panel, which attaches to the furnace body, is available with several sizes of fur-

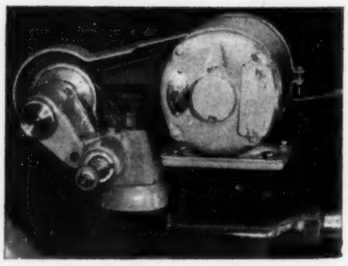
naces. Panel houses a temperature controller, load carrying relays, thermocouple lead and fused disconnect switch.

It is necessary for the user to attach the panel to the furnace with screws provided and make two connections to the furnace and one to the electric line. Either a fully automatic electronic pyrometer-controller or a manually operated controller-indicator may be used in the panel.

Check No. 6 on Reply Card for more Details

Internal Grinding Attachment

Built with sufficient power to maintain a more constant wheel speed under varying loads and to prevent stalling under comparatively heavy cuts is an internal grinding attach-



ment available from South Bend Lathe Works, South Bend 22, Ind. It is powered by a constant speed, continuous duty 1/6-hp, 3450 rpm, alternating current motor. It is compound belted through an intermediate shaft to obtain a quill spindle speed of 30,000 rpm.

Grinding wheel and intermediate

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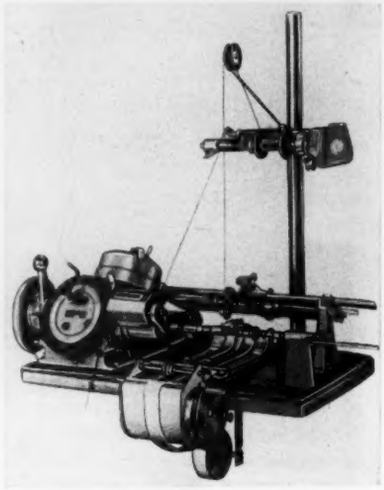
shaft spindles run on high speed ball bearings requiring no adjustment. Lubrication is supplied from built-in oil wells. Longest of four arbors supplied permits a hole 3⅞ inches deep to be ground when using a 1-inch wheel. Four grinding wheels for these arbors with ¼-inch face, ¼-inch bore and ⅝, ¾, ⅞ and 1-inch diameters are included. A ⅛-inch chuck is supplied so that the various sizes and shapes of mounted grinding wheels may be used and holes down to ⅛-inch may be ground.

Check No. 7 on Reply Card for more Details

Winds Coils of Fine Wire

Cosa Corp., 405 Lexington Ave., New York 17, N. Y., representatives for Micafil Ltd., Zurich, Switzerland, is offering a fine wire coil winding machine, model OOFA-1/1 PE, with fully automatic paper interleaving attachment. When guided automatically it will handle wires from 24 to 48 awg (without insulation) and wires up to 15 awg (without insulation) when guided by hand.



It will wind coils up to a maximum 3⅛ inches coil diameter and from ⅝ to 3¾ inches wide. Operating features include stepless adjustment of wire guide advance, automatic reversing of wire, easy setting of wire width and automatic cutoff at a preset number of turns.

Check No. 8 on Reply Card for more Details

Truck for Small Elevators

A hinged platform incorporated in a power industrial truck made by Elwell-Parker Electric Co., Cleveland, O., makes it possible to reduce platform length by almost 50 per cent, solving the problem of use on small elevators. Overall length of the truck with platform in load-carrying position is 109 inches and with the

Hold It, Please — May We Remind You Of Something?

Something unusual about that bar of tool steel you are about to use. Labeled "Carpenter", it contains a "*plus alloy*" that holds remarkable promise for you.

It's an "alloy" that has *proved* it can give you a new freedom from die failures . . . new highs in output per grind . . . far fewer die headaches. Strangely enough, it's not a tangible alloy. But our Mill men swear it's there. They can prove it's made of patience, and human care, and skill—backed by production controls unequalled in the industry. It's the result of our decision years ago to meet a wide demand for tool steels that guarantee *unvarying* uniformity . . . and dependability above the ordinary.

And it is paying off a hundredfold in your every step from toolmaking through actual production!

Okay, put that bar to work. And remember: That "plus alloy" will *continue* to work for you . . . help you get *more* production from *present* equipment, through better tools and dies. The Carpenter Steel Co., 139 W. Bern St., Reading, Pa.

The Cone Test—One of many Carpenter quality controls. Exclusive with Carpenter, it checks and controls hardenability of water-hardening Matched Tool Steels—assures that sections of the same size will have uniform hardness penetration, shipment after shipment.

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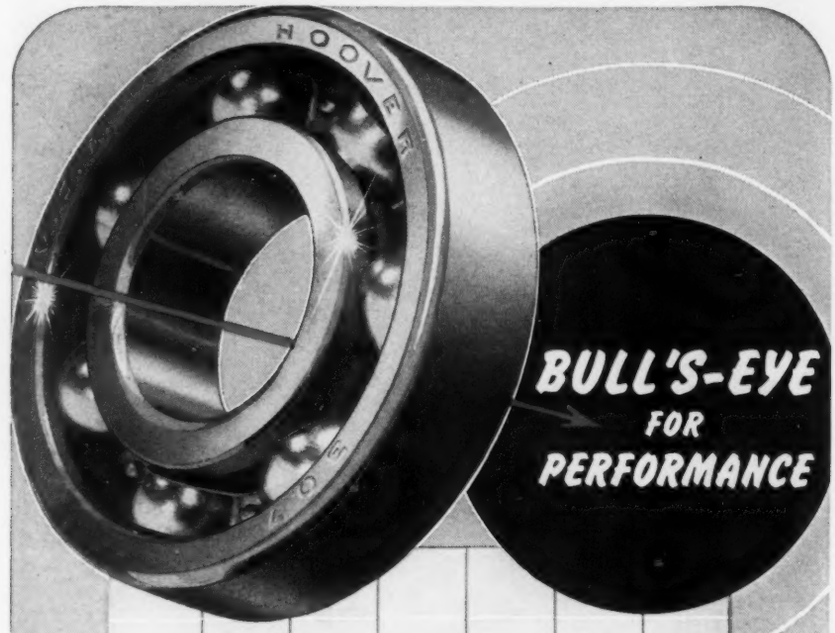
To get started now, just call Carpenter. Warehouse stocks in principal cities throughout the country.



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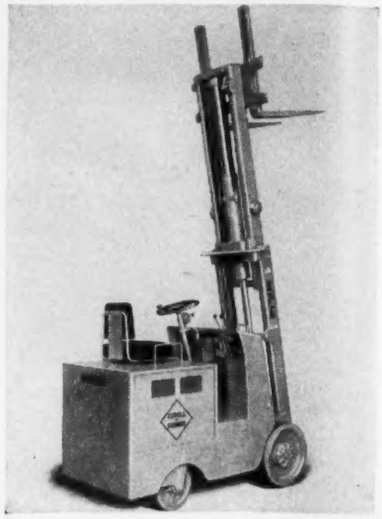
Ann Arbor, Michigan

forward end of the platform raised, the length is 84 inches.

Truck weight is 3670 pounds and its load-carrying capacity is 4000 pounds. Height of platform above floor in lowered position is 7 inches and raised to maximum is 59 inches. First half of platform is secured in

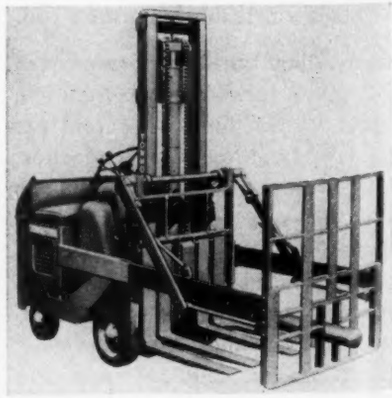


the usual manner to the truck's elevating mechanism, while the outer half in lowered position rests upon a forward part of the platform underframe. Two sections are joined by specially designed hinges which assure alignment and security for truck and load.

Check No. 9 on Reply Card for more Details

Eases Coiled Wire Handling

Combining a standard ram and standard hydraulic unloader accessories to provide a double-duty unit for handling coiled wire, is a development of Towmotor Corp., 1226 E. 152nd St.,

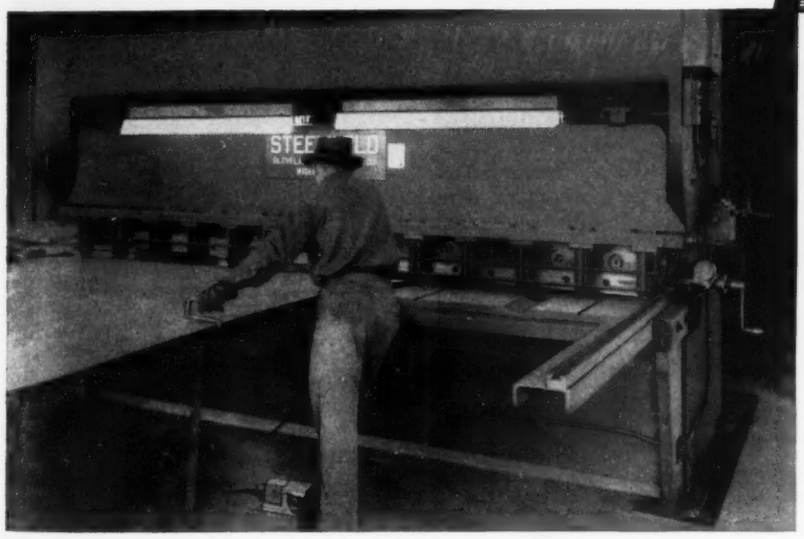


Cleveland 10, O. The two accessories are furnished on a model LT-40 lift truck, together with a set of fully tapered and polished works. Forks and ram are used interchangeably.

With the forks, a load of spools of wire is lifted directly on the forks

TOE CONTROL ELIMINATES KNEE ACTION

ELECTRIC FOOT SWITCH REDUCES FATIGUE - SPEEDS SHEARING



● The operator can slide the switch around the floor to wherever handiest to use. A mere touch of the toe and the knife is set in motion. Electric toe control is standard on all Steelweld Shears and furnished at no extra cost. It enables shearing speeds not attainable with ordinary foot treadles for many cutting operations.

● If you have spent a day at a shear with the old mechanical foot treadle, you know what knee action is. As the hours roll by it grows more and more tiresome, fatiguing, and production slips accordingly.

At last something has been done about it. Electric foot switches have been adopted as standard equipment for Steelweld Shears. Knee action has been replaced by fast easy toe control.

Toe control is one of many outstanding features you get on Steelweld Shears. These machines are in a class by themselves. Learn what they can do for you.

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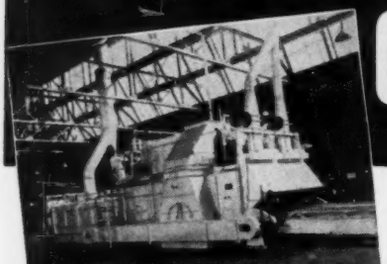
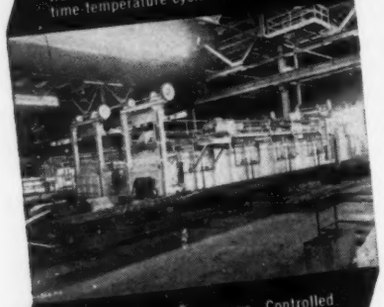
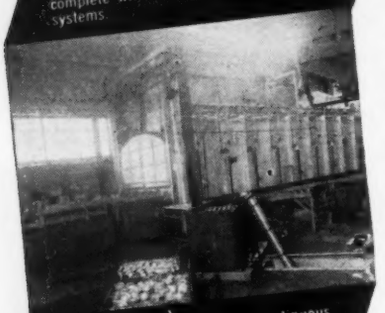


Continental Twin Chamber Annealer of the recirculating type with automatic conveyor transfers and close tolerance control for time-temperature cycle.



Two Continental Continuous Controlled Atmosphere Annealers, roller rail type, complete with transfer cars and conveyor systems.



Continental Stamping Annealer, continuous roller rail type, complete with baskets, handling convevors, and automatic controls for work handling and temperature cycles.

Six Continental "Top Hat" Cover Type Furnaces for bright annealing high-carbon steel, complete with gas generator and automatic controlled time-temperature cycling.

problems to results . . .

As varied as the problems were in these heating process requirements, CONTINENTAL produced the solutions. We have the answer to your problems, too.

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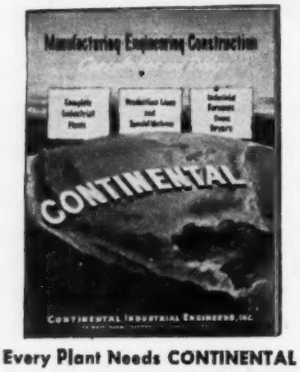

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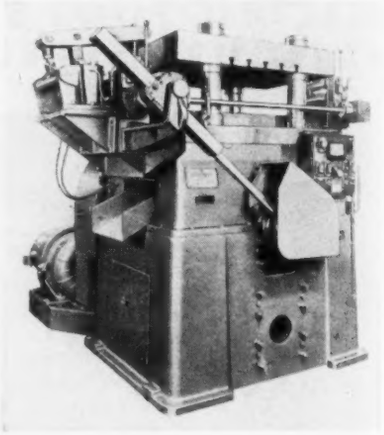
from a pallet, and with the ram, a group of coils in vertical position is picked up by inserting it through the open center of the coils. In depositing the load, the unloader pushes the coils off either the forks or the ram. Capacity of the unit, when equipped with 36-inch forks, is 2000 pounds at 18-inch load center. When equipped with a 60-inch ram, capacity is 1400 pounds at 30-inch load center.

Check No. 10 on Reply Card for more Details

Wide Bed Presses

Built to Joint Industrial Conference standards with T-slots in the top platen and remote control of the variable speed drive, is a line of wide bed automatic presses announced by Brandes Press Co., 6408 Euclid Av., Cleveland 13, O. One of the presses in the line, ranging from 30 to 2500



tons, is illustrated, having a 175-ton capacity, a die clearance of 28 inches from front to back and 60 inches from right to left.

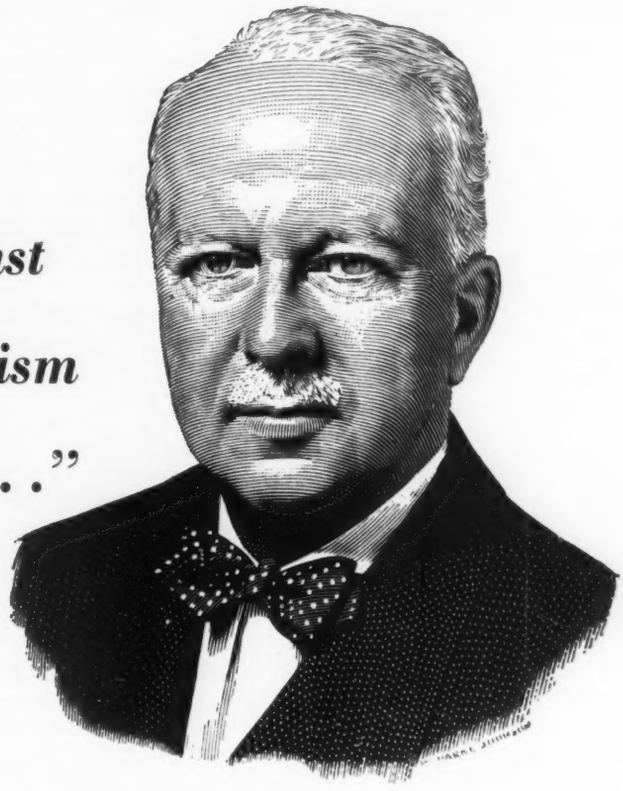
Roll feeds have a 3-inch vertical adjustment and will take material up to 18 inches wide. Scrap cutter has a 1-inch horizontal adjustment. Pitch adjustment of roll feeds range from 0 to 12 inches. This press will take strokes up to 12 inches. Speed up to 250 strokes per minute is obtainable, depending upon length of stroke. Reciprocating parts are air counterbalanced.

Check No. 11 on Reply Card for more Details

Electric Tramrail Is Shielded

Reduced arcing and flashing of conductor bars by use of large-area shoe contacts with individual springs in each shoe is claimed for a tramrail and crane shielded electrification system designed by Forker Corp., 2043 Random Rd., Cleveland 6, O. For three-phase operation with capacities to 600 v at 75 amp, the system is installed directly below the tram-

"The immunizer against the disease of communism is a certain feeling . . ."



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Mr. Gifford has believed in—and worked for—payroll savings plans for thirty-seven years—since 1913, when, as Statistician of the A. T. & T., Mr. Gifford developed a payroll savings plan for the purchase of A. T. & T. stock.

In 1938, A. T. & T. employees were offered a Payroll Savings Plan for the purchase of U. S. Savings Bonds. To date, Bell System employees have invested ***more than half a billion*** dollars in savings bonds—with a maturity value in excess of $675,000,000.

In upwards of 21,000 large companies, more than 8 million Americans are investing $150,000,000 in U. S. Savings Bonds ***every month.*** To the systematic saving of these men and women—and the whole-hearted co-operation of executives like Mr. Gifford—is due in no small measure the important feeling of ownership shared by the Americans who own 56 billion dollars in U. S. Savings Bonds (against 45 billions at the end of the war!).

Every Payroll Savings Plan is a reflection of the vision and enthusiasm of the top executive of the company. If he gets behind it, ***personally,*** employee participation is high—to the benefit of the country, the company and the employee. If the interest of the Big Boss is active—participation may very well exceed the 50% mark. The top man is the key man in a Payroll Savings Plan.

Get in touch with your State Director, Savings Bond Division, U. S. Treasury Department. He will help you put in a plan . . . or he will show you how to increase employee participation—without undue effort or high pressure tactics.

The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the G. M. Basford Company and

STEEL

rail track tread and offers operating and maintenance personnel more complete protection from electrical hazards.

Housing is open only at the bottom, thus preventing dust accumulation, as well as providing protection from rain and ice formation in outdoor installations. Insulated conductor bars are of copper-bearing mild steel. Units are factory fabricated in 10-foot lengths for erection on the job. Splicing is by means of aluminum conductor bar couplings. Clearance from track tread to ceiling is the same for both hand-powered and electrified systems.

Check No. 12 on Reply Card for more Details

• • •

REVERSIBLE PIPE TONGS: Without removing tongs or loosening the chain, the new Vulcan reversible tongs, announced by J. H. Williams & Co., Buffalo 7, N. Y., will turn pipe in either direction. Outer jaws can be removed to make an efficient fitting tong for narrow beads and flanges. Tongs are available in four sizes for pipe and fittings from ¼ to 8 inches.

Check No. 13 on Reply Card for more Details

MOTOR STARTER: Designed for starting and stopping polyphase induction motors, is the new gasketed loom-motor starter introduced by Westinghouse Electric Corp., Pittsburgh 30, Pa. Rotary-action, slamproof handle mechanism operates an overcenter toggle mechanism that gives quick make and quick break contact action.

Check No. 14 on Reply Card for more Details

CRANE SCALE STAND: A heavy, welded plate steel stand equipped with casters has been developed by Hydroway Scales Inc., Detroit 19, Mich., for holding Hydroscales. Two sizes are available, one for small crane scales of ¼ to 5 ton capacity and a larger size to hold scales up to 50 tons capacity. Scale is lowered by hoist into stand and secured by a locking bar.

Check No. 15 on Reply Card for more Details

FASTENING TOOL: Dual action is a new feature of the improved light duty fastening tool available from Ramset Fasteners Inc., Cleveland 11, O. It offers users a choice of either turn or tap operation depending upon varying working conditions.

Check No. 16 on Reply Card for more Details

HAS INTERCHANGEABLE PARTS: Universal joints with all parts interchangeable are offered by Boston Gear Works, Quincy, Mass. Yokes are of heat treated alloy steel with bearing surfaces precision ground and outside diameter ground to plus 0.000, minus 0.001 for concentricity. Bearing pins and center bearing block are hardened and ground. It has a self-locking assembly ring and self-closing ball valve oiler.

Check No. 17 on Reply Card for more Details

IMPROVED FURNACE: Work is simpler to load and unload and element is easier to remove and replace in improved model MO224 Pereco molybdenum vacuum furnace made by Pereny Equipment Co., Columbus 12, O. This dual tube, electric furnace has a maximum temperature range of 3300° F with a neutral to reducing atmosphere pure enough to sinter chromium without oxidation.

Check No. 18 on Reply Card for more Details

STAMPS THIN METALS: Model JG-1 stamping tool, announced by M. E. Cunningham Co., Pittsburgh, Pa., stamps steel sheet, strip and other flat thin metals. It can be made with a holder section for accommodating almost any size or number of characters.

Check No. 19 on Reply Card for more Details

NONFLAMMABLE FLUID: Hydraulic fluid F-9, developed by Monsanto Chemical Co., St. Louis 4, Mo., is a nonflammable product developed primarily for use in equipment such as die casting machines, hydroelectric turbines, hydraulic presses, etc. It has good fire resistant qualities, lubricity and pumping characteristics, high resistance to mechanical shear and chemical breakdown.

Check No. 20 on Reply Card for more Details

TUNGSTEN ELECTRODES: Pure tungsten electrodes with a melting point about 6000° F, suitable for atomic-hydrogen and gas-shielded electric arc welding of a wide range of metals are announced by Sylvania Electric Products Inc., Towanda, Pa. Electrodes resist extreme heat of the arc, retain stiffness, keep arc properly spaced and will be consumed at an almost imperceptible rate. They are available in any diameter and length.

Check No. 21 on Reply Card for more Details

COMBINATION UNITS: Metron Instrument Co., Denver 9, Colo., offers integral combinations of its standard miniature variable and fixed ratio drives. Units are small, completely sealed, packaged items which retain features of their individual components. For very low power applications requiring both speed reduction and variable speed, these units deliver 2 pound-inches of torque.

Check No. 22 on Reply Card for more Details

TAPE WITH HOOK: Steel tape No. 504 has a hook riveted to the end of the tape line which enables a workman to measure metal sheets without assistance. Made by L. S. Starrett Co., Athol, Mass., it has graduations starting from the inner side of the hook and marked with consecutive inches in 16th divisions from 1 to 144 or 1 to 240 depending on tape length.

Check No. 23 on Reply Card for more Details

STORES TOOLS: Snead & Co., Orange, Va., offer a compact storage system for tools, parts and materials. It consists of a fixed row of double-faced compartments having a row of swinging double-faced compartments on both sides. Shelves are fully adjustable on 1-inch centers. Outside compartments can be swung into the aisle like a door. Swinging action of cases is controlled rigidly without rails or guides.

Check No. 24 on Reply Card for more Details

CHAINS FOR BUNDLES: A new line of bundling chains for industrial use is announced by Round Associate Chain Companies, Cleveland, O. They are available in ⅝, ¾ and ⅞-inch chain sizes and in lengths specified by the user. Chains may be obtained in low or high carbon steel or alloy quality depending upon size of load to be lifted and type of service.

Check No. 25 on Reply Card for more Details

COLOR IDENTIFIES STONES: Each stone in the new line of silicon carbide and aluminum oxide abrasive stones offered by Industrial Products Division, Elgin National Watch Co., Elgin, Ill., is permanently color tipped in a brilliant range from black to yellow according to its grit size. Known as Elgin Dymo, stones range in size from ⅛ x 4 inches to 1 x 6 inches, from 220 to 600 grit and from extra soft to medium hard.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEEL shortage rapidly approaches critical stage. Tonnage available for general distribution is shrinking steadily under impact of mounting DO and other rated orders. And this is only the beginning with military and related expenditures expected to hit a $50 billion pace by next summer. Metalworking shop shutdowns and manufacturing curtailments for lack of steel and other scarce materials already are imminent, although full effects of the diversion of supplies from normal consuming channels will not be felt until first quarter next year.

CONTROLS—Allocations are piling upon allocations with resulting confusion in mill order acceptances and scheduling. January steel output already is committed virtually 100 per cent against rated orders and expected heavy carryover from fourth quarter. Little, if any, open tonnage will be available for unrated requirements that month. And conditions will worsen as the year progresses. Some trade authorities estimate rated tonnage commitments of the mills for March delivery will run between 30 and 35 per cent of total finished steel output, in some products, such as sheets and plates, probably exceeding 40 per cent. There just won't be enough steel to go around, and the belief is growing that it is only the matter of a relatively short time when the government will find it necessary to slap on mandatory controls somewhat similar to those in World War II, regulating not only production and distribution, but effecting cutbacks in civilian goods manufacture as well. Washington now has such a program in mind as the realities of the situation begin to come out in bolder relief.

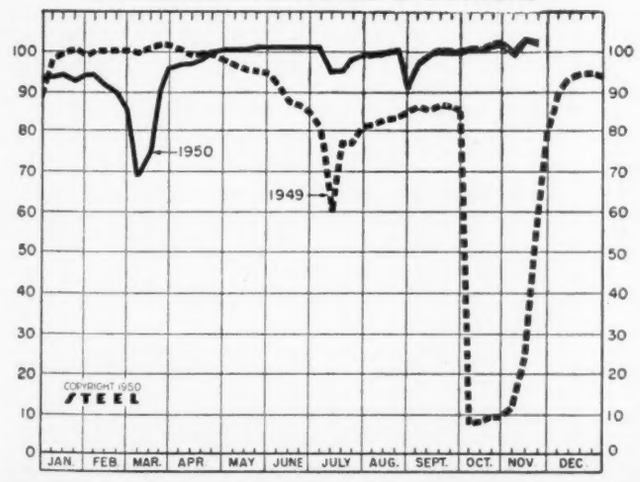
SUPPLIES— Mills have generally departed from the policy of booking on a quarterly basis, especially as regards the major products. As a result consumers can only hope to cover their requirements from month-to-month, and even then they are not certain of full shipments on allotted quotas since firm mill commitments are lacking in the face of rising priority requirements. Consumers who have been unable to improve their inventory positions this quarter will be further stymied early in 1951. Quotas for January will be smaller, and in some instances there will be no open capacity beyond rated orders for the month. Scattered wildcat strikes in the steel industry are causing production losses which cannot be recouped.

PRODUCTION—Steelmaking is being pushed to the limit of available facilities. Wear-and-tear is beginning to force some curtailments, and raw materials shortages are cause for concern. One large steelmaker has run short of manganese ore and is reported paying another producer a premium for stopgap supplies. Close watch on scrap and iron ore supplies is being maintained. Despite production difficulties indications are output this year will hit an alltime record of about 97 million net tons of ingots.

INGOT RATE— Operations eased fractionally last week, the national ingot rate being estimated at 102.5 per cent, off ½ point from the record 103 per cent the preceding week.

PRICES— Isolated advances in finished steel prices continue to be made but for the most part the market is marking time pending settlement of current wage negotiations. Expectations are a general advance, possibly averaging more than $10 per ton, will be effected when the wage matter is out of the way. Benjamin Fairless, president of U. S. Steel, thinks a 10 per cent increase would be needed to offset raw material cost increases to date and a wage boost of 15 cents per hour. Last week STEEL's weighted index on finished steel held at 157.76, as did the arithmetical composite at $95.09. Pig iron composites were unchanged with basic, $49.04, No. 2 foundry, $49.54, and malleable, $50.27. Steelmaking scrap held firm at $41.67.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Nov. 18	Change	Same Week 1949	Same Week 1948
Pittsburgh	103	— 1.5*	43	97.5
Chicago	104	— 2*	43	98
Eastern Pa.	100	0	79.5	95
Youngstown	104	0	50	105
Wheeling	99.5	+ 1	78	92.5
Cleveland	99.5	+ 1.5*	73	99
Buffalo	104	0	101	104
Birmingham	100	0	25	100
New England	91	+ 1	73	90
Cincinnati	106	0	56	99
St. Louis	95	+ 3.5	91.5	84.5
Detroit	106	0	79	99
Western	101	— 2	58	..
Estimated national rate	102.5	— 0.5	56	99

Based on weekly steelmaking capacity of 1,906,268 net tons for first half and 1,928,721 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. *Change from revised rate.

Composite Market Averages

	Nov. 16 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	157.76	157.76	157.62	152.52	101.87
Index in cents per lb. ..	4.274	4.274	4.270	4.132	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$95.09	$95.09	$95.09	$91.64	$58.27
No. 2 Fdry, Pig Iron, GT	49.54	49.54	49.35	46.10	25.42
Basic Pig Iron, GT	49.04	49.04	48.10	45.60	24.75
Malleable Pig Iron, GT..	50.27	50.27	49.63	47.27	26.04
Steelmaking Scrap, GT..	41.67	41.67	41.50	30.00	19.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Nov. 16 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars, H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	3.93	3.93	3.93	3.83	2.57
Bars, C. F., Pittsburgh....	4.15	4.15	4.15	3.95-4.00	2.75
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.46	3.46	3.46	3.50	2.215
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ...	3.90	3.90	3.90	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.90	3.90	3.90	3.50	2.25
Plates, del. Philadelphia ..	3.84	3.84	3.84	3.59	2.30
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ...	3.50-75	3.50-75	3.50-75	3.25	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh	4.15-85	4.15-85	4.15-50	4.00	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00-15	2.90
Strip, C.R., Detroit	4.35-5.10	4.35-5.10	4.35-95	4.20-25	2.90
Wire, Basic, Pittsburgh ...	4.50-75	4.50-75	4.50-75	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30-60	5.30-60	5.30-60	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$50.00	$50.00	$47-$50	$47.00	$26.25
Basic, Valley	49.00	49.00	46-49	46.00	25.25
Basic, del. Phila.	53.39	53.39	51.44	49.44	27.09
No. 2 Fdry, Pitts.	49.50	49.50	49.50	46.50	25.75
No. 2 Fdry, Chicago	49.50	49.50	49.50	46.50	25.75
No. 2 Fdry, Valley	49.50	49.50	49.50	46.50	25.75
No. 2 Fdry, del. Phila. ...	53.89	53.89	51.94	49.94	27.59
No. 2 Fdry, Birm.	45.88	45.88	45.88	39.38	22.13
No. 2 Fdry (Birm.) del. Cin.	52.58	52.58	52.58	46.08	25.81
Malleable, Valley	49.50	49.50	49.50	46.50	25.75
Malleable, Chicago	49.50	49.50	46.50-49.50	46.50	25.75
Charcoal, Lyles, Tenn. ...	62.00	62.00	62.00	60.00	33.00
Ferromanganese, Etna, Pa.	175.0	175.00	175.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts...	$44.00	$44.00	$44.00	$33.00	$20.00
No. 1 Heavy Melt. E. Pa..	41.00	41.00	40.50	26.50	18.75
No. 1 Heavy Melt. Chicago	40.00	40.00	40.00	30.50	18.75
No. 1 Heavy Melt. Valley.	43.75	43.75	43.75	33.75	20.00
No. 1 Heavy Melt. Cleve...	43.25	43.25	43.25	30.25	19.50
No. 1 Heavy Melt. Buffalo.	41.50	41.50	41.50	29.75	19.25
Rails, Rerolling, Chicago..	64.50	64.50	64.50	39.50	22.25
No. 1 Cast, Chicago	59.00	59.00	53.50	42.50	20.00

Coke, Net Ton

Beehive, Furn., Connisvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connisvl...	16.50	16.50	16.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	15.80	12.55	6.35
Tin, New York	132.00	130.00	113.00	92.50	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	32.00	32.00	32.00	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$51.00	$51.50	$52.00	$52.50
Brooklyn,N.Y., del.	....	55.79	56.29	....
Newark,del.	53.63	54.13	54.63	55.13
Philadelphia, del.	53.39	53.89	54.39	54.89
Birmingham District				
AlabamaCity,Ala. R2	45.38	45.88	....	....
Birmingham R2	45.38	45.88	....	....
Birmingham S9	45.38	45.88	....	....
Woodward,Ala. W15	45.38	45.88	....	....
Cincinnati,del.	....	52.58	....	....
Buffalo District				
Buffalo H1, R2	49.00	49.50	50.00	....
Tonawanda,N.Y., W12	49.00	49.50	50.00	....
N.Tonawanda,N.Y., T9	....	49.50	50.00	....
Boston,del.	58.26	58.76	59.20	....
Rochester,N.Y.,del.	51.63	52.13	52.63	....
Syracuse,N.Y.,del.	52.58	53.08	53.58	....
Chicago District				
Chicago I-3	49.00	49.50	49.50	50.00
Gary,Ind. C3	49.00	....	49.50	....
IndianaHarbor,Ind. I-2	49.00	....	49.50	....
So.Chicago,Ill. W14	49.00	49.50	49.50	....
So.Chicago,Ill. Y1	49.00	49.50	49.50	....
So.Chicago,Ill. C3	49.00	....	49.50	50.00
Milwaukee,del.	50.89	51.39	51.39	51.89
Muskegon,Mich.,del.	....	54.98	54.98	....
Cleveland District				
Cleveland A7	49.00	49.50	49.50	50.00
Cleveland R2	49.00	49.50	49.50	....
Akron, del. from Cleve.	51.39	51.89	51.89	51.39
Lorain,O. N3	49.00	....	....	50.00
Duluth I-3	....	....	49.50	....
Erie,Pa. I-3	49.00	49.50	49.50	50.00
Everett,Mass. E1	....	52.25	52.75	....
Fontana,Calif. K1	55.00	55.50	....	....
Geneva,Utah G1	49.00	49.50	....	....
Seattle,Tacoma,Wash.,del.	....	57.20	....	....
Portland,Oreg.,del.	....	57.20	....	....
LosAngeles,SanFrancisco,del.	56.70	57.20	....	....
GraniteCity,Ill. M10	50.90	51.40	51.90	....
St. Louis,del. (inc. tax)	51 65	52.15	52.65	....
Ironton,Utah C11	49.00	49.50	....	....
LoneStar,Tex. L6	45.00	*45.50	45.50	....
Minnequa,Colo. C10	49.00	49.50	50.00	....
Pittsburgh District				
NevilleIsland,Pa. P8	....	49.50	49.50	50.00
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	....	50.69	50.69	51.19
McKeesRocks,del.	....	50.45	50.45	50.95
Lawrenceville,Homestead, McKeesport,Monaca,del.	....	50.94	50.94	51.44
Verona,del.	....	51.40	51.40	51.90
Brackenridge,del.	....	51.63	51.63	52.13
Bessemer,Pa. C3	49.00	....	49.50	50.00
Clairton,Rankin,So.Duquesne,Pa. C3	49.00	....	....	....
McKeesport,Pa. N3	49.00	....	....	50.00
Sharpsville,Pa. S6	....	....	49.50	50.00
Steelton,Pa. B2	51.00	51.50	52.00	52.50
Swedeland,Pa. A3	53.00	53.50	54.00	54.50
Toledo,O. I-3	49.00	49.50	49.50	50.00
Cincinnati,del.	54.01	54.51	....	....
Troy,N.Y., R2	51.00	51.50	52.00	52.50
Youngstown District				
Hubbard,O. Y1	49.00	49.50	49.50	....
Youngstown Y1	49.00	49.50	49.50	50.00
Mansfield,O.,del.	53.26	53.76	53.76	54.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$59.50
Buffalo H1	*60.75*

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls,N.Y. P15	*$83.00*
Keokuk,Iowa, Openhearth & Fdry, frt. allowed K2	*89.50*
Keokuk, OH & Fdry., 12½ lb. piglets, 16% Si, frt. allowed K2 ..	*92.50*
Wenatchee,Wash., O.H. & Fdry., frt. allowed K2	*89.50*

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$62.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$54.00
Steelton,Pa. B2	57.00
Philadelphia delivered	60.00
Troy,N.Y. R2	57.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Nov. 16, 1950; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R7 ....$50.00
Fontana, Calif. K1 ....76.00
Munhall, Pa. C3 ....50.00

INGOTS, Alloy (NT)
Detroit R7 ....$51.00
Fontana, Calif. K1 ....77.00
Houston, Tex. S5 ....59.00
Midland, Pa. C18 ....51.00
Munhall, Pa. C3 ....51.00
So. Duquesne, Pa. C3 ..51.00

BILLETS, BLOOMS & Slabs Carbon, Rerolling (NT)
Bessemer, Pa. C3 ....$53.00
Clairton, Pa. C3 ....53.00
Conshohocken, Pa. A3 ..62.00
Ensley, Ala. T2 ....53.00
Fairfield, Ala T2 ....53.00
Fontana, Calif. K1 ....72.00
Gary, Ind. C3 ....53.00
Johnstown, Pa. B2 ....53.00
Lackawanna, N.Y. B2..53.00
Munhall, Pa. C3 ....53.00
So. Chicago, Ill. C3 ...53.00
So. Duquesne, Pa. C3 ...53.00

Carbon, Forging (NT)
Bessemer, Pa. C3 ....$63.00
Buffalo R2 ....63.00
Canton, O. R2 ....63.00
Clairton, Pa. C3 ....63.00
Cleveland R2 ....63.00
Conshohocken, Pa. A3 ..68.00
Detroit R7 ....66.00
Ensley, Ala T2 ....63.00
Fairfield, Ala. T2 ....63.00
Fontana, Calif. K1 ...82.00
Gary, Ind. C3 ....63.00
Geneva, Utah G1 ....63.00
Houston, Tex. S5 ....71.00
Ind. Harbor, Ind. I-2 ...63.00
Johnstown, Pa. B2 ....63.00
Lackawanna, N.Y. B2 .63.00
LosAngeles B3 ....82.00
Munhall, Pa. C3 ....63.00
Seattle B3 ....82.00
So. Chicago C3, R2, W14..63.00
So. Duquesne, Pa. C3 ..63.00
So. SanFrancisco B3 ...82.00

Alloy (NT)
Bethlehem, Pa. B2 ....$66.00
Buffalo R2 ....66.00
Canton, O. R2, T7 ....66.00
Conshohocken, Pa. A3..70.00
Detroit R7 ....66.00
Fontana, Calif, K1 ....85.00
Gary, Ind. C3 ....66.00
Houston, Tex. S5 ....74.00
Ind. Harbor, Ind. Y1 ...66.00
Johnstown, Pa. B2 ....66.00
Lackawanna, N.Y. B2..66.00
LosAngeles B3 ....86.00
Massillon, O. R2 ....66.00
Midland, Pa. C18 ....66.00
Munhall, Pa. C3 ....66.00
So. Chicago C3, R2, W14..66.00
So. Duquesne, Pa. C3 ..66.00
Warren, O. C17 ....66.00
Youngstown Y1 ....66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton, O. R2 ....$76.00
Cleveland R2 ....76.00
Fontana, Calif. K1 ....100.00
Gary, Ind. C3 ....76.00
Ind. Harbor, Ind. I-2 ...76.00
Massillon, O. R2 ....76.00
So. Chicago, Ill. R2 ....76.00
So. Duquesne, Pa. C3 ...76.00

SHEET BARS (NT)
Fontana, Calif. K1 ....$86.00

SKELP
Aliquippa, Pa. J5 ....3.25
Munhall, Pa. C3 ....3.15
Warren, O. R2 ....3.15
Youngstown C3, R2 ....3.15

WIRE RODS
Alabama City, Ala. R2 ..3.85
Buffalo W12 ....3.85
Cleveland A7 ....3.85
Donora, Pa. A7 ....3.85
Fairfield, Ala. T2 ....3.85
Fontana, Calif. K1 ....4.60
Houston, Tex. S5 ....4.25
Ind. Harbor, Ind. Y1 ...3.85
Johnstown, Pa. B2 ....3.85
Joliet, Ill. A7 ....3.85
LosAngeles B3 ....4.65
Minnequa, Colo. C10 ....4.10
Monessen, Pa. P7 ....4.05
No. Tonawanda, N.Y. B11..3.85
Pittsburg, Calif. C11 ...4.50
Portsmouth, O. P12 ....3.85
Roebling, N.J. R5 ....3.95
So. Chicago, Ill. R2 ....3.85
SparrowsPoint, Md. B2..3.95
Sterling, Ill. (1) N15 ....4.10
Struthers, O. Y1 ....3.85
Torrance, Calif. C11 ...4.65
Worcester A7 ....4.15

STRUCTURALS
Carbon Steel Stand. Shapes
Alabama City, Ala. R2 ..3.40
Aliquippa, Pa. J5 ....3.40
Bessemer, Ala. T2 ....3.40
Bethlehem, Pa. B2 ....3.45
Clairton, Pa. C3 ....3.40
Fairfield, Ala. T2 ....3.40
Fontana, Calif. K1 ....4.00
Gary, Ind. C3 ....3.40
Geneva, Utah G1 ....3.40
Houston, Tex. S5 ....3.80
Ind. Harbor, Ind. I-2 ....3.40
Johnstown, Pa. B2 ....3.45
KansasCity, Mo. S5 ....4.00
Lackawanna, N.Y. B2 ..3.45
LosAngeles B3 ....4.00
Minnequa, Colo. C10 ....3.85
Munhall, Pa. C3 ....3.40
Niles, Calif. (22) P1 ....4.02
Phoenixville, Pa. P4 ...4.25
Portland, Oreg. O4 ....4.25
Seattle B3 ....4.05
So. Chicago, Ill. C3, W14..3.40
So. SanFrancisco B3 ....3.95
Torrance, Calif. C11 ....4.00
Weirton, W.Va. W6 ....3.40

Alloy Stand. Shapes
Clairton, Pa. C3 ....4.05
Fontana, Calif. K1 ....5.25
Munhall, Pa. C3 ....4.05
So. Chicago, Ill. C3 ....4.05

H.S., L.A. Stand. Shapes
Aliquippa, Pa. J5 ....5.15
Bessemer, Ala. T2 ....5.15
Bethlehem, Pa. (14) B2 ..5.20
Clairton, Pa. C3 ....5.15
Fairfield, Ala. T2 ....5.15
Fontana, Calif. K1 ....5.75
Gary, Ind. C3 ....5.15
Geneva, Utah G1 ....5.10
Ind. Harbor, Ind. I-2 ....5.15
Ind. Harbor, Ind. Y1 ....5.40
Johnstown, Pa. B2 ....5.20
Lackawanna, N.Y. (14) B2 5.20
LosAngeles B3 ....5.75
Munhall, Pa. C3 ....5.15
So. Chicago, Ill. C3 ....5.15
So. SanFrancisco B3 ....5.70
Struthers, O. Y1 ....5.40

Wide Flange
BethlehemPa. B2 ....3.45
Lackawanna, N.Y. B2 ..3.45
Munhall, Pa. C3 ....3.40
So. Chicago, Ill. C3 ....3.40

H.S., L.A. Wide Flange
Bethlehem, Pa. B2 ....5.20
Lackawanna, N.Y. B2 ..5.20
Munhall, Pa. C3 ....5.10
So. Chicago, Ill. C3 ....5.10

SHEET STEEL PILING
Ind. Harbor, Ind. I-2 ....4.20
Lackawanna, N.Y. B2 ..4.20
Munhall, Pa. C3 ....4.20
So. Chicago, Ill. C3 ....4.20
Weirton, W. Va. W6 ....4.20

BEARING PILES
Munhall, Pa. C3 ....3.40
So. Chicago, Ill. C3 ....3.40

PLATES, High-Strength Low-Alloy
Aliquippa, Pa. J5 ....5.35
Bessemer, Ala. T2 ....5.35
Clairton, Pa. C3 ....5.35
Cleveland J5, R2 ....5.35
Conshohocken, Pa. A3...5.60
Ecorse, Mich. G5 ....5.85
Fairfield, Ala. T2 ....5.35
Fontana, Calif. K1 ....5.95
Gary, Ind. C3 ....5.35
Geneva, Utah G1 ....5.35
Ind. Harbor, Ind. I-2, ..5.35
Ind. Harbor, Ind. Y1 ....5.60
Johnstown, Pa. B2 ....5.35
Munhall, Pa. C3 ....5.35
Pittsburgh J5 ....5.35
Sharon, Pa. S3 ....5.70
So. Chicago, Ill. C3 ....5.35
SparrowsPoint, Md. B2..5.35
Warren, O. R2 ....5.35
Youngstown Y1 ....5.60

PLATES, Open-Hearth Alloy
Claymont, Del. W16 ....4.50
Coatesville, Pa. L7 ....4.80
Conshohocken, Pa. A3 ..4.55
Fontana, Calif. K1 ....5.40
Gary, Ind. C3 ....4.40
Johnstown, Pa. B2 ....4.40
Munhall, Pa. C3 ....4.40
Sharon, Pa. S3 ....4.75
So. Chicago, Ill. C3 ....4.40
SparrowsPoint, Md. B2 ..4.40

FLOOR PLATES
Cleveland J5 ....4.55
Conshohocken, Pa. A3 ..4.55
Harrisburg, Pa. C5 ....5.25
Ind. Harbor, Ind. I-2 ....4.55
Munhall, Pa. C3 ....4.55
So. Chicago, Ill. C3 ....4.55

PLATES (Universal Mill)
Fontana, Calif. K1 ....4.40

PLATES, Carbon A.R.
Fontana, Calif. K1 ....5.25

PLATES, Carbon Steel
AlabamaCity, Ala. R2 ..3.50
Aliquippa, Pa. J5 ....3.50
Ashland, Ky. (15) A10 ..3.50
Bessemer, Ala. T2 ....3.50
Clairton, Pa. C3 ....3.50
Claymont, Del. W16 ....3.90
Cleveland J5 R2 ....3.50
Coatesville, Pa. L7 ....3.90
Conshohocken, Pa. A3 ..3.75
Ecorse, Mich. G5 ....3.75
Fairfield, Ala. T2 ....3.50
Fontana, Calif. K1 ....4.10
Gary, Ind. C3 ....3.50
Granite City, Ill. G4 ....4.20
Geneva, Utah G1 ....3.50
Harrisburg, Pa. C5 ....4.25
Houston, Tex. S5 ....3.90
Ind. Harbor, Ind. I-2, Y1..3.50
Johnstown, Pa. B2 ....3.50
Lackawanna, N.Y. B2 ..3.50
Minnequa, Colo. C10 ....4.30
Munhall, Pa. C3 ....3.50
Pittsburgh J5 ....3.50
Seattle B3 ....4.40
Sharon, Pa. S3 ....3.75
So. Chicago, Ill. C3, W14..3.50
SparrowsPoint, Md. B2 ..3.50
Steubenville, O. W10 ....3.50
Warren, O. R2 ....3.50
Weirton, W.Va. W6 ....3.50
Youngstown C3, R2, Y1..3.50

PLATES, Wrought Iron
Economy, Pa. B14 ....7.85

PLATES, Ingot Iron
Ashland, c.l. (15) A10 ...3.75
Ashland, lcl (15) A10 ...4.25
Cleveland, cl. R2 ....4.10
Warren, O. cl R2 ....4.10

BARS, Hot-Rolled Carbon
AlabamaCity, Ala. R2 ..3.45
Aliquippa, Pa. J5 ....3.45
Alton, Ill. (1) L1 ....3.45
Atlanta, Ga. A11 ....4.00
Bessemer, Ala. T2 ....3.45
Buffalo R2 ....3.45
Canton, O. R2 ....3.45
Clairton, Pa. C3 ....3.45
Cleveland R2 ....3.45
Ecorse, Mich. G5 ....3.65
Emeryville, Calif. J7 ....4.20
Fairfield, Ala. T2 ....3.45
Fontana, Calif. K1 ....4.10
Gary, Ind. C3 ....3.45
Houston, Tex. S5 ....3.85
Ind Harbor, Ind. I-2, Y1..3.45
Johnstown, Pa. B2 ....3.45
KansasCity, Mo. S5 ....4.05
Lackawanna, N.Y. B2 ..3.45
LosAngeles B3 ....4.15
Milton, Pa. B6 ....3.70
Minnequa, Colo. C10 ....3.90
Niles, Calif. P1 ....4.17
N. Tonawanda, N.Y. B11..3.45
Pittsburg, Calif. C11 ...4.15
Pittsburgh J5 ....3.45
Portland, Oreg. O4 ....4.10
Seattle B3, N14 ....4.20
So. Chicago C3, R2, W14..3.45
So. Duquesne, Pa. C3 ....3.45
S. SanFran., Cal. B3 ....4.20
Struthers, O. Y1 ....3.45
Torrance, Calif. C11 ....4.15
Weirton, W.Va. W6 ....3.45
Youngstown C3, R2 ....3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa, Pa. J5 ....3.45
Atlanta A11 ....4.00
Johnstown, Pa. B2 ....3.45
Lackawanna, N.Y. B2 ...3.45
Niles, Calif. P1 ....4.17
Portland, Oreg. O4 ....4.20
SanFrancisco S7 ....4.00
Weirton, W.Va. W6 ....3.45

BAR SIZE ANGLES; H.R. CARBON
Bethlehem, Pa. B2 ....3.65

BARS, Hot-Rolled Alloy
Bethlehem, Pa. B2 ....3.95
Buffalo R2 ....3.95
Canton, O. R2, T7 ....3.95
Clairton, Pa. C3 ....3.95
Ecorse, Mich. G5 ....4.25
Fontana, Calif. K1 ....4.95
Gary, Ind. C3 ....3.95
Houston, Tex. S5 ....4.35
Ind. Harbor, Ind. I-2, Y1..3.95
Johnstown, Pa. B2 ....3.95
KansasCity, Mo. S5 ....4.55
Lackawanna, N.Y. B2 ..3.95
LosAngeles B3 ....5.00
Massillon, O. R2 ....3.95
Midland, Pa. C18 ....3.95
So. Chicago C3, R2, W14..3.95
So. Duquesne, Pa. C3 ...3.95
Struthers, O. Y1 ....3.95
Warren, O. C17 ....4.20
Youngstown C3 ....3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton, Pa. C3 ....4.20
Fontana, Calif. K1 ....4.95
Gary, Ind. C3 ....4.20
Youngstown C3 ....4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa, Pa. J5 ....5.20
Atlanta A11 ....5.35
Bessemer, Ala. T2 ....5.20
Bethlehem, Pa. B2 ....5.20
Clairton, Pa. C3 ....5.20
Cleveland R2 ....5.20
Ecorse, Mich. G5 ....5.65
Fairfield, Ala. T2 ....5.20
Fontana, Calif. K1 ....6.25
Gary, Ind. C3 ....5.20
Ind. Harbor, Ind. I-2 ....5.20
IndianaHarbor, Ind. Y1..5.45
Johnstown, Pa. B2 ....5.20
Lackawanna, N.Y. B2 ..5.20
LosAngeles B3 ....5.90
Pittsburgh J5 ....5.20
So. Duquesne, Pa. C3 ....5.20
So. SanFrancisco B3 ...5.95
Struthers, O. Y1 ....5.45
Youngstown C3 ....5.20

BARS, Cold-Finished Carbon
Aliquippa, Pa. K5 ....4.15
Ambridge, Pa. W18 ....4.15
BeaverFalls, Pa. M12, R2 .4.15
Buffalo B5 ....4.15
Camden, N.J. P13 ....4.60
Carnegie, Pa. C12 ....4.15
Chicago W18 ....4.15
Cleveland A7, C20 ....4.15
Detroit P17 ....4.30
Donora, Pa. A7 ....4.15
Ecorse, Mich. G5 ....4.35
Elyria, O. W8 ....4.15
FranklinPark, Ill. N5 ...4.15
Gary, Ind. R2 ....4.15
Hammond, Ind. L2, M13..4.15
Hartford, Conn. R2 ....4.55
Harvey, Ill. B5 ....4.15
LosAngeles R2 ....5.55
Mansfield, Mass. B5 ....4.55
Massillon, O. R2, R8 ...4.15
Midland, Pa. C18 ....4.15
Monaca, Pa. S17 ....4.15
Newark, N.J. W18 ....4.55
Plymouth, Mich. P5 ....4.40
Pittsburgh J5 ....4.15
Putnam, Conn. W18 ....4.55
Readville, Mass. C14 ...4.55
St. Louis, Mo. M5 ....4.55
So. Chicago, Ill. W14 ....4.15
SpringCity, Pa. (5) K3 ..4.55
Struthers, O. Y1 ....4.15
Waukegan, Ill. A7 ....4.15
Youngstown F3, Y1 ....4.15

BARS, Cold-Finished Alloy
Aliquippa, Pa. K5 ....4.90
Ambridge, Pa. W18 ....4.90
BeaverFalls, Pa. M12 ...4.90
Bethlehem, Pa. B2 ....4.90
Buffalo B5 ....4.90
Canton, O. R2, T7 ....4.90
Carnegie, Pa. C12 ....4.90
Chicago W18 ....4.90
Cleveland A7, C20 ....4.90
Detroit P17 ....5.05
Donora, Pa. A7 ....4.90
Elyria, O. W8 ....4.90
Gary, Ind. R2 ....4.90
Hammond, Ind. L2, M13..4.90
Hartford, Conn. R2 ....5.20
Harvey, Ill. B5 ....4.90
Lackawanna, N.Y. B2 ..4.90
Mansfield, Mass. B5 ....5.20
Massillon, O. R2, R8 ...4.90
Midland, Pa. C18 ....4.90
Monaca, Pa. S17 ....4.90
Newark, N.J. W18 ....5.20
Plymouth, Mich. P5 ....5.10
So. Chicago, Ill. R2, W14..4.90
Struthers, O. Y1 ....4.90
Warren, O. C17 ....4.90
Waukegan, Ill. A7 ....4.90
Worcester, Mass. A7 ....5.20
Youngstown F3, Y1 ....4.90

RAIL STEEL BARS
ChicagoHts. (3) I-2, C2 ..4.00
ChicagoHts. (4) I-2 ....3.45
Dallas, Tex. (4) S20 ....6.00
Franklin, Pa. (3) F5 ....4.00
FortWorth, Tex. (26) T4..4.63
Huntngtn, W.Va. (3) W7..4.00
Marion, O. (3) P11 ....4.00
Moline, Ill. (3) R2 ....3.55
Williamsport (3) S19 ....4.50
Williamsport (4) S19 ....4.60

BARS, Wrought Iron
Economy, Pa. (S.R.) B14..8.60
Economy, Pa. (D.R.) B14 11.00
Economy (Staybolt) B14 11.30
Dover, N.J. (Staybolt) U1 15.00
Dover (Eng. Bolt) U1 ..13.50
Dover (Wrgt. Iron) U1 ..12.25
McK. Rks. (S.R.) L5 ...8.60
McK. Rks. (D.R.) L5 ..11.25

BARS, Reinforcing (Fabricators)
AlabamaCity, Ala. R2 ..3.45
Alton, Ill. (6) L1 ....3.45
Atlanta A11 ....4.00
Buffalo R2 ....3.45
Cleveland R2 ....3.45
Emeryville, Calif. J7 ..4.20
Fairfield, Ala. T2 ....3.45
Fontana, Calif. K1 ....4.10
Gary, Ind. C3 ....3.45
Houston, Tex. S5 ....3.85
Ind. Harbor, Ind. I-2, Y1..3.45
Johnstown, Pa. B2 ....3.45
KansasCity, Mo. S5 ....4.05
Lackawanna, N.Y. B2 ..3.45
LosAngeles B3 ....4.15
Milton, Pa. B6 ....3.70
Minnequa, Colo. C10 ....4.25
Niles, Calif. P1 ....4.17
Pittsburg, Calif. C11 ...4.15
Pittsburgh J5 ....3.45
Portland, Oreg. O4 ....4.70
Seattle B3, N14 ....4.20
So. Chicago, Ill. R2 ....3.45
So. Duquesne, Pa. C3 ...3.45
So. SanFrancisco B3 ....4.20
SparrowsPoint, Md. B2 .3.45
Struthers, O. Y1 ....3.45
Torrance, Calif. C11 ...4.15
Youngstown C3, R2 ...3.45

BARS, Reinforcing (Fabricated; to Consumers)
Huntington, W.Va. W7 .4.50
Johnstown, ¼-1" B2 ...4.35
LosAngeles B3 ....5.00
Marion, O. P11 ....4.75
Seattle B3, N14 ....5.10
SoSanFrancisco B3 ...5.00
SparrowsPt., ¼-1" B2 .4.35
Williamsport, Pa. S19 ..4.35

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity, Ala. R2..3.35
Ashland, Ky. (8) A10 ...3.35
Butler, Pa. A10 ....3.35
Cleveland J5, R2 ....3.35
Conshohocken, Pa. A3 ..3.60
Detroit M1 ....4.15
Ecorse, Mich. (8) G5 ....3.55
Fairfield, Ala. T2 ....3.35
Fontana, Calif. K1 ....4.25
Gary, Ind. C3 ....3.35
GraniteCity, Ill. G4 ....4.05
Geneva, Utah G1 ....3.45
Ind. Harbor, Ind. I-2, Y1..3.35
Irvin, Pa. C3 ....3.35
Lackawanna, N.Y. B2 ..3.35
Munhall, Pa. C3 ....3.35
Niles, O. N12 ....4.50
Pittsburg, Calif. C11 ...4.05
Pittsburgh J5 ....3.35
Sharon, Pa. S3 ....3.75
So. Chicago, Ill. W14 ....3.35
SparrowsPoint, Md. B2 .3.35
Steubenville, O. W10 ....3.35
Torrance, Calif. C11 ...4.05
Warren, O. R2 ....3.35
Weirton, W.Va. W6 ....3.35
Youngstown C3, Y1 ....3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity, Ala. R2 ..4.50
Dover, O. R1 ....4.65
Ind. Harbor, Ind. I-2 ....4.40
Mansfield, O. E6 ....4.15
Niles, O. N12 ....5.00
Torrance, Calif. C11 ...5.15

SHEETS, H-R (14-ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.05
Conshohocken, Pa. A3 ..5.30
Ecorse, Mich. G5 ....5.50
Fairfield, Ala. T2 ....5.05
Fontana, Calif. K1 ....6.00
Gary, Ind. C3 ....5.05
Ind. Harbor, Ind. I-2 ....5.05
IndianaHarbor, Ind. Y1..5.30
Irvin, Pa. C3 ....5.05
Lackawanna (35) B2 ..5.05
Pittsburgh J5 ....5.05
Sharon, Pa. S3 ....5.40
So. Chicago, Ill. C3 ....5.05
SparrowsPoint (36) B2 .5.05
Warren, O. R2 ....5.05
Weirton, W.Va. W6 ....5.30
Youngstown, C3 ....5.05
Youngstown, Y1 ....5.30

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.20
Ecorse, Mich. G5 ....6.65
Fontana, Calif. K1 ....7.05
Gary, Ind. C3 ....6.20
Ind. Harbor, Ind. I-2, ...6.20
IndianaHarbor, Ind. Y1..6.45
Irvin, Pa. C3 ....6.20
Lackawanna (37) B2 ...6.20
Pittsburgh J5 ....6.20
SparrowsPoint (38) B2..6.20
Warren, O. R2 ....6.20
Weirton, W.Va. W6 ....6.45
Youngstown Y1 ....6.45

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.80
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky.(8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	5.10
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo,Ind.(13) C16	4.80
MartinsFerry,O. W10	4.40
Niles,O. N12	5.50
Pittsburg, Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind.(13) C16	5.35
Niles,O. N12	6.05

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	5.30
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.00
Follansbee,W.Va.(23)F4	5.70

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.80	...
MartinsFy.O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron

	An'l	Galv.
Apollo,Pa. B14	12.60	16.85

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

SHEETS, Well Casing

Fontana,Calif. K1	4.80

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10(cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill.G4(cut lengths)	...	...	7.40	8.65	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.50	7.00	...	...
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)

	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Har. I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	5.10
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	5.20
Ecorse,Mich. G5	5.40
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	5.90
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2	4.95
IndianaHarbor,Ind. Y1	5.20
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	5.30
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	5.20
Youngstown Y1	5.20
Youngstown C3	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.45
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity, Mo. S5	5.70
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S3	5.45
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.80
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.75
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.75
Conshohocken,Pa. A3	3.50
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.50
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.75
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.75
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.50
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	10.10
Carnegie,Pa. S18	10.10
Cleveland A7	9.50
Dover,O. G6	10.00
Fontana,Calif. K1	11.15
Harrison,N.J. C18	*10.10*
NewBritn.Conn.(10) S15	10.10
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	10.10
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	4.85	6.30	6.90	8.50	11.15
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	6.30	6.90	8.85	11.15
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Detroit D2	5.10	6.15	6.75	...	....
Detroit(21) D2	5.35	6.25	6.85	...	....
Dover,O. G6	5.00	6.30	6.90	8.85	11.15
FranklinPark,Ill. T6	4.50	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	*7.20*	*9.15*	*11.85*
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.85	6.30	6.90	8.85	11.15
NewCastle,Pa. B4	4.85	6.30	6.90	8.85	....
NewCastle,Pa. E5	5.00	6.30	6.90	8.85	11.15
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.85	6.30	6.90	8.85	11.15
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	*10.05*	*12.00*	*14.60*

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G5	5.00
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	4.85
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	5.10
Detroit D2	5.10
Detroit M1	4.95
Dover,O. (40) G6	5.00
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.85
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.50
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.15
NewBritain(10) S15	4.85
NewCastle,Pa. B4	4.85
NewCastle,Pa.(40) E5	4.75
NewHaven,Conn. D2	5.35
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.50
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.85
SparrowsPoint,Md. B2	4.15
Trenton,N.J. R5	5.50
Wallingford,Conn. W2	*5.35*
Warren,O.(40) T5	4.75
Warren,O. R2	4.15
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.80
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.45
Youngstown Y1	6.45

STRIP, Electro Galvanized

Dover,O. G6	5.00
Warren,O. T5	4.75
Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A.M. Byers Co.

C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.Mills Co.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H4 Heppenstall Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.80
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.90
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill. (1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	6.20
Johnstown, Pa. B2	5.90
Los Angeles B3	6.85
Millbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.70
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. M8	5.35
Dover,O. G6	5.70
Fostoria,O. S1	6.00
Kokomo, Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P16	5.35
Monessen,Pa. P7	5.60
Pawtucket,R.I.(12) N8	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. M8	8.45
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7, T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.85
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. M8	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O. (24) S1	5.00
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.85
Los Angeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.75
Newark, 6-8ga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago, Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.80
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester,Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
Los Angeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquappa J5	5.35	5.80
Atlanta A11	5.70	5.95
Bartonville(1)K4	5.35	5.80
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.50
Crawfordsville M8	5.45	5.95
Donora A7	5.35	5.50
Duluth A7	5.35	5.50
Fairfield T2	5.35	5.50
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.80
Joliet,Ill. A7	5.35	5.50
KansasCy.Mo. S5	5.95	6.20
Kokomo C16	5.70	5.95
LosAngeles B3	6.30	...
Minnequa C10	5.60	6.10
Monessen P7	5.60	5.85
Palmer(31) W12	4.80	...
Pitts.Calif. C11	6.30	6.45
Prtsmth.(18)P12	5.35	5.60
Rankin A7	5.35	5.50
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.80
SparrowPt. B2	5.45	5.90
Sterling,Ill.(1)N15	5.65	5.85
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.80

WIRE (16 gage)	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.50
Bartonville(1) K4	9.80	11.50
Cleveland A7	9.80	11.20
Crawfordsville M8	9.80	11.30
Fostoria,O. S1	10.40	12.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	12.05
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.55
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	130
Atlanta A11	133
Bartonville,Ill.(19) K4	126
Crawfordsville M8	135
Donora,Pa. A7	124
Duluth,Minn. A7	124
Fairfield,Ala. T2	124
Houston,Tex. S5	134
Johnstown,Pa. B2	130
Joliet,Ill. A7	124
KansasCity,Mo. S5	138
Kokomo,Ind. C16	135
Minnequa,Colo. C10	136
Monessen,Pa. P7	133
Pittsburg,Calif. C11	144
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	124
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	151
SparrowsPoint,Md. B2	132
Sterling,Ill.(1) N15	133

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	125
Duluth A7	116
Franklin,Pa. F5	125
Huntington,W.Va. W7	125
Johnstown,Pa. B2	125
Joliet,Ill. A7	116
Marion,O. P11	125
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	130

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	120
Atlanta A11	123
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. M8	123
Donora,Pa. A7	114
Duluth A7	114
Houston,Tex. S5	124
Fairfield,Ala. T2	114
Johnstown,Pa. B2	120
Johnstn,17ga.6" B2	194
Johnstn,17ga.,4" B2	197
Joliet,Ill. A7	114
KansasCity,Mo. S5	128
Kokomo,Ind. C16	123
Minnequa,Colo. C10	128
Monessen,Pa. P7	123
Pittsburg,Calif. C11	137
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	114
So.Chicago,Ill. R2	116
Sterling,Ill.(1) N15	118

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	113
Atlanta A11	119
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville M8	120
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity, Mo. S5	125
Kokomo, Ind. C16	120
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	119

AXLES

Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	106
Aliquippa,Pa. (13) J5	106
Atlanta A11	113
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. M8	112
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	112
Minnequa,Colo. C10	111
Monessen,Pa. P7	112
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	112
Torrance,Calif. C11	126
Worcester,Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. M8	5.90
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.65
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	9.35

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.35	8.35	8.60
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P16	8.05	8.05	8.30
Monessen,Pa. P7	8.30	8.30	8.55
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	4.25

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3.

Key to Producing Companies

M1 McLouth Steel Corp.	P12 Porthsmouth Division, Detroit Steel Corp.
M4 Mahoning Valley Steel	P13 Precision Drawn Steel
M5 Medart Co.	P14 Pitts.Screw & Bolt Co.
M6 Mercer Tube & Mfg. Co.	P15 Pittsburgh Metallurgical
M8 Mid-States Steel & Wire	P16 Page Steel & Wire Div., Amer. Chain & Cable
M9 Midvale Co.	P17 Plymouth Steel Co.
M10 Missouri-Illinois Furnace	R1 Reeves Steel & Mfg. Co.
M12 Moltrup Steel Products	R2 Republic Steel Corp.
M13 Monarch Steel Co.	R3 Rhode Island Steel Corp.
M14 McInnes Steel Co.	R5 Roebling's Sons, John A.
N2 National Supply Co.	R6 Rome Strip Steel Co.
N3 National Tube Co.	R7 Rotary Electric Steel Co.
N5 Nelsen Steel & Wire Co.	R8 RelianceDiv.,EatonMfg.
N6 NewEng.HighCarb.Wire	S1 Senaca Wire & Mfg. Co.
N8 Newman-Crosby Steel	S3 Sharon Steel Corp.
N12 Niles Rolling Mill Co.	S5 Sheffield Steel Corp.
N14 Nrthwst. Steel Roll.Mills	S6 Shenango Furnace Co.
N15 Northwestern S.&W. Co.	S7 Simmons Co.
N16 New Delphos Mfg. Co.	S8 Simonds Saw & Steel Co.
O3 Oliver Iron & Steel Corp.	S9 Sloss-Sheffield,S.&I. Co.
O4 Oregon Steel Mills	S13 Standard Forgings Corp.
P1 Pacific States Steel Corp.	S14 Standard Tube Co.
P2 Pacific Tube Co.	S15 Stanley Works
P4 Phoenix Iron & Steel Co.	S16 Struthers Iron & Steel
P5 Pilgrim Drawn Steel	S17 Superior Drawn Steel Co.
P6 Pittsburgh Coke&Chem.	S18 Superior Steel Corp.
P7 Pittsburgh Steel Co.	S19 Sweet's Steel Co.
P9 Pittsburgh Tube Co.	S20 Southern States Steel
P11 Pollak Steel Co.	T2 Tenn. Coal, Iron & R.R.
	T3 Tenn.Prod. & Chem.
	T4 Texas Steel Co.
	T5 Thomas Steel Co.
	T6 Thompson Wire Co.
	T7 Timken Roller Bearing
	T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
	U1 Ulster Iron Works
	U4 Universal Cyclops Steel
	V2 Vanadium Alloys Steel
	V3 Vulcan Crucible Steel Co.
	W1 Wallace Barnes Co.
	W2 Wallingford Steel Co.
	W3 Washburn Wire Corp.
	W4 Washington Steel Corp.
	W6 Weirton Steel Co.
	W7 W. Va. Steel & Mfg. Co.
	W8 West.Auto.Mach.Screw
	W9 Wheatland Tube Co.
	W10 Wheeling Steel Corp.
	W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
	W13 Wilson Steel & Wire Co.
	W14 Wisconsin Steel Div. International Harvester
	W15 Woodward Iron Co.
	W16 Worth Steel Co.
	W18 Wyckoff Steel Co.
	Y1 Youngstown Sheet&Tube

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 14 gage.
(24) Deduct 0.20c for finer than 15 gage.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (¾" bar elec. furn. billet, 5.03c); to consumers, 5.28c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	4.0	2.0	4.0
¼	6.0	0.42	33.5	31.5	30.5	4.0	2.0	5.0
⅜	6.0	0.57	29.0	27.0	26.0	+1.5	+3.5	0.5
½	8.5	0.85	40.5	38.5	39.5	18.5	16.5	18.5
¾	11.5	1.13	43.5	41.5	42.5	22.5	20.5	21.5
1	17.0	1.68	46.0	44.0	45.0	26.0	24.0	25.0
1¼	23.0	2.28	46.5	44.5	45.5	26.5	24.5	25.5
1½	27.5	2.73	47.0	45.0	46.0	27.5	25.5	26.5
2	37.0	3.68	47.5	45.5	46.5	28.0	26.0	27.0
2½	58.5	5.82	48.0	46.0	47.0	28.5	26.5	27.5
3	76.5	7.62	48.0	46.0	47.0	28.5	26.5	27.5

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Monaca, Pa. P9 quotes 1½ pts higher on ⅛" and ¼", 2 pts higher on ⅜", 1½ pts higher on ½" and ¾", 1 pt higher on 1" and 1¼", ½ pt higher on 1½" through 3"; Snaron, Pa. M6 quotes 1 pt lower on ⅛", 1½ pts higher on ¼", ½ pt higher on ⅜" and 1 pt lower on ½", ½ pt lower on ¾", 1½ pts lower on 1" and 1¼", 2 pts lower on 1½" through 3"; Butler, Pa. F6, ⅛" through ⅜"; Benwood, W. Va. W10 quotes 3 pts lower on ⅛", 2 pts lower on ¼", 3 pts lower on ⅜"; Wheatland, Pa. W9 quotes ½ pt lower on ⅛" and ¼", 2½ pts higher on ½" and ¾", 2 pts higher on 1" and 1¼", 1½ pts higher on 1½" through 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, plus 23% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 pt lower on ¾", 2 pts lower on 1", 1½ pts lower on 1¼", 2 pts lower on 1½" and 2", 1½ pts lower on 2½" and 3"; Etna, Pa. N2 plus 23% on 3½" and 4". Fontana, Calif. K1 quotes 11 pts lower on ½" and larger continuous weld and 11% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 3 pts lower on 2", 2½ pts lower on 2½-6 in.; Lorain, N3 quotes 1½ pts lower; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates—Carbon Base 10%	Plates—Carbon Base 20%	Strip—Cold-Rolled Carbon Base Both Sides	Sheets—Carbon Base 10%	Sheets—Carbon Base 20%	Sheets—Cu Base Both Sides
302	....	....	....	19.75	24.00	77.00
304	23.50	26.50–28.00	....	20.75–23.50	24.00–25.50	77.00
309	29.00	33.50	....	....	....	....
310	35.00	39.50	....	....	....	144.00
316	28.00	31.00–32.50	....	26.00	33.00–34.50	....
317	33.00	37.50	....	....	....	....
318	32.00	36.50	....	....	....	....
321	25.00	29.50	....	23.00	25.00	111.00
347	26.00	29.00–30.50	....	24.00	30.00–31.50	130.00
405	19.75	26.25	....	....	....	....
410	19.25	25.75	....	....	....	....
Nickel	31.00	41.00	33.50	45.00	....	....
Inconel	39.00	51.00	....	....	....	165.00
Monel	32.00	42.00	....	....	....	....
Copper*	....	....	21.70†	27.65‡	....	....

* Deoxidized. † 18.20c for hot-rolled. ‡ 24.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, ineonel, monel-clad plates. Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 23
- ⅝-in. & ⅞-in. 26
- 1-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

	H.P. & C.P. Reg.	H.P. & C.P. Heavy
Square:		
½-in. & smaller	23	23
⅝-in. & ⅞-in..	20	15
1-in.-1½-in. ..	23	10
1⅝ in. & larger	16	10
H.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅞-in..	24	15
1-in.-1½-in. ..	20	11
1⅝ in. & larger	17	11
C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅞-in..	30	25
1-in. & 1½-in.	27	20
1⅝ in. & larger	20	15

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.
½-in. & smaller ..	35	41
⅝-in. & ⅞-in. ...	29	36
1-in.-1½-in.	23	31
1⅝-in. & larger ..	17	21
Light		
⅞-in. & smaller		41
½-in. to ⅝-in.		35
¾-in. to 1½-in.		33

STEEL STOVE BOLTS

F.o.b. plant; per cent off list in packages)

Plain finish .....56 & 10
Plated finishes ....41 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 47
- ¾-in. through 1 in. ... 40

Longer than 6 in.:
- ⅝-in. & smaller 33
- ¾-in. through 1 in. ... 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 44
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger .. 24
N.F. thread, all diams... 18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.25c
7/16-in. under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.00
8 to 16	48,60,72	17.00
7	48,60	18.64
6	48,60	19.95
4,5½	40	20.48
3	40	21.53
2½	24,30	22.05
2	24,30	24.15

CARBON

40	100,110	7.65
35	100,110	7.65
30	84,110	7.65
24	72 to 104	7.65
17 to 20	34,90	7.65
14	60,72	8.16
10,12	60	8.42

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	39.00	32.00	30.00
302	39.00	34.50	30.00
303	41.00	38.00	32.50
304	41.00	36.50	31.50
309	53.50	52.50	43.00
316	54.50	56.50	47.50
321	47.00	46.00	35.50
347	51.50	50.00	40.00
410	34.50	28.50	24.50
416	35.00	35.00	25.00
420	42.00	45.00	30.00
430	37.00	29.00	25.00
501	25.50	24.00	13.00
502	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.

Baltimore, bars, wire and structurals A10.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

Harrison, N. J., Types 302, 304, 316 wire and strip D6.

Massillon, all products R2.

McKeesport, Pa., bars, sheets except Type 416 C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Reading, Pa., bars & strip C4.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 54.00c and bars 43.50c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip C8.

COAL CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-32.00
Toluol, one deg...21.00-28.00
Industrial xylol ..21.00-29.50

Per ton bulk, ovens

Sulphate of ammonia.$32-45

Cents per pound, ovens

Phenol, 40 (carlots, non returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $41; less than 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge Iron ..... Cents 98+% Fe, carlots.. 16.00
Swedish, c.i.f. New York, in bags...7.40-8.50
Electrolytic Iron:
- Annealed, 99.5% Fe 39.50
- Unannealed, 99+% Fe 33.50
- Unannealed 99+% Fe(minus 325 mesh)48.50

Powder Flakes 44.50
Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns..70.00-135.00

Aluminum:
- Carlots, freight allowed 27.50
- Atomized, 500 lb drums, freight allowed 32.50

Brass, 10-ton lots 30.00-33.25
Copper:
- Electrolytic 36.75
- Reduced 33.75-37.00

Lead 23.00
Manganese:
- Minus 100-mesh ... 52.00
- Minus 35 mesh ... 48.00
- Minus 200 mesh ... 56.00

Nickel unannealed .. 75.50
Nickel-Silver, 10-ton lots 43.25
Silicon 34.00
Solder (plus cost of metal) 8.50
Stainless Steel, 302 .. 75.00
Tin $1.575
Zinc, 10-ton lots..23.00-30.50
Tungsten: Dollars
- 99%, minus 80 to 200 mesh, freight allowed: over 1000 lb ..... 2.90; 1000 lb ..... 2.95; less than 1000 lb. 3.00
- 98.8% minus 65 mesh, freight allowed: 1000 lb and over.. 3.65; less than 1000 lb.. 3.75

Molybdenum:
- 99%, minus 80 to 200 mesh, over 500 lb ..... 2.25; 200 to 500 lb ..... 2.60; less than 200 lb .. 2.75
- 82-88%, freight allowed, 2000 lb and over .. 2.40; less than 2000 lb.. 2.45

Chromium, electrolytic 99% Cr min. 3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvil,fur. .$14.00-14.50
Connellsvil,fdry. ..16.00-17.00
New River, foundry ..19.00
Wise county, foundry.15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens.$22.75
Everett, Mass., ovens New England, del. †24.30
Chicago, ovens 21.00
Chicago del. .....†22.45
Detroit, del. 24.91
Terre Haute, ovens ...22.50
Milwaukee, ovens 23.00
Indianapolis, ovens ...22.00
Chicago, del. 25.37
Cincinnati, del. 24.92
Detroit, del. 25.90
Ironton, O., ovens 21.50
Cincinnati, del. 24.06
Painesville, O., ovens..23.25
Buffalo, del. 25.37
Cleveland, del. 24.97
Erie, Pa., ovens 22.50
Birmingham, ovens 19.40
Birmingham, del. ...20.45
Philadelphia, ovens ..22.10
NevilleIsland,Pa.,ovens 22.00
Swedeland, Pa., ovens.22.00
St. Louis, ovens 22.99
St. Louis, del. 24.12
Portsmouth, O., ovens.21.50
Cincinnati, del. 24.06
Detroit, ovens 23.00
Detroit, del. *24.09
Buffalo, del. 26.04
Flint, del. 25.44
Pontiac, del. 24.39
Saginaw, del. 25.75

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York(city)	5.82	6.84	7.84	6.14	...	5.97	6.64	8.60	5.95	6.18	7.64
New York(c'try)	5.52	6.64	7.54	5.84	...	5.67	6.34	8.70	5.65	5.88	7.34
Boston (city) ..	5.95	6.75	7.89	5.90	...	5.80	6.39	8.70	5.95	6.58	7.48
Boston (c'try) .	5.75	6.55	7.69	5.70	...	5.60	6.19	8.50	5.75	6.38	7.28
Phila. (city) ..	6.60-6.70	6.75	7.20	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try) ..	6.35-6.45	6.50	6.95	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.77	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.57	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.55	...	6.80	5.83	...	5.73	6.30	...	5.83	5.65	7.33
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[5]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[5]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.70-6.95	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[5]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.50	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.30	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city) ..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.15	5.30	...	5.30	5.85	9.75††[5]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.95	5.10	...	5.10	5.65	9.55††[5]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	7.29	5.44	...	5.44	6.09	9.89††[5]	5.59	5.74	6.94
Milwau. (c'try).	5.29	6.09	7.09	5.24	...	5.24	5.89	9.69††[5]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[5]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[5]	5.58	5.73	6.98
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. –	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.70	7.88
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.55	...
Los Ang. (city)	6.10	7.65	7.90	6.15	8.90	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	7.70	5.95	8.70	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[2]	7.45[9]	8.25[2]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[2]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73; chemical-bonded chrome brick, $77; magnesite brick, $99; chemical-bonded magnesite, $88.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic deadburned, ⅜" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Narlo, Clay Center, Woodville, Gibsonburg, Bettsville, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Chinese	$36.00
Brazilian	36.00
Bolivian	36.00
Domestic scheelite, del.	36.00

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $70, Palmerton, Pa.; $71, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l., packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $174, f.o.b. Birmingham; $187, Johnstown, Pa.; $185, Sheridan, Pa.; $175, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max, 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 29.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65 - 68%). Contract, lump bulk, 1.50% C grade, 18-20% Si 9.60c per lb of alloy, carload packed, 10.35c, ton lot 11.25c, less ton 12.25c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%,

(*Please turn to page* 164)

Metals Controls Program Outlined

All key materials may be under complete allocation from producer to consumer by next summer, government official says. Aluminum, tin and zinc orders issued

Washington—Regulations covering aluminum, tin, zinc are initial steps in the government's program to place strategic nonferrous metals under its control. These will lead eventually to a system of complete allocation of all key materials from producer to consumer, expected to be in effect by next summer. Allocations programs for aluminum and copper are coming up soon.

Manly Fleischmann, general counsel, National Production Authority, says he cannot "conceive" of a controls program short of this which would do the job required by that time. He based his prediction on the assumption that military expenditures by next summer will have grown to $50 billion or $60 billion a year.

The controls program outlined by Mr. Fleischmann is similar to the "Controlled Materials Plan" used by the War Production Board in the last war. Such a system would mean that the NPA would pass on practically every purchase and delivery of several scarce materials. It could also mean direct cutbacks in production of nonessential products, such as automobiles and appliances, but plans for these direct production restrictions are not now in the works.

Mr. Fleischmann indicated that only steel, copper and aluminum probably would be the only metals to come under a full controlled materials plan by next July. He added that "junior" CMP's probably would be used for other metals and materials in tight supply, such as zinc, tin, cobalt, manganese, cadmium and tungsten.

Aluminum—Order M-7 is designed to provide the necessary quantities of aluminum for the rearmament effort and for equitable distribution among all users of the aluminum available after defense requirements are met. It provides that users of aluminum may not use for nondefense purposes within each quarter beginning Jan. 1 more than 65 per cent of the average quarterly use of the metal during the first six months of 1950. In December of this year, users of aluminum will be permitted 100 per cent of their average monthly consumption during the first six months of 1950.

Aluminum industry sources claim that the cutback will mean a reduction of between 40 and 45 per cent from current use, since consumption of aluminum has increased from the first half of this year.

The order applies to users of aluminum products and forms. It does not put any limit on production by aluminum producers or converters to aluminum forms or products or on use in the production of other metals or metal alloys.

To assist small businesses, persons using less than 1000 pounds of aluminum a year are exempted from the order. The order does not apply to contracts placed prior to Nov. 11, 1950, for delivery before Apr. 1 of aluminum conductor cable, wire and bus bar for the production, transmission or distribution of electric energy.

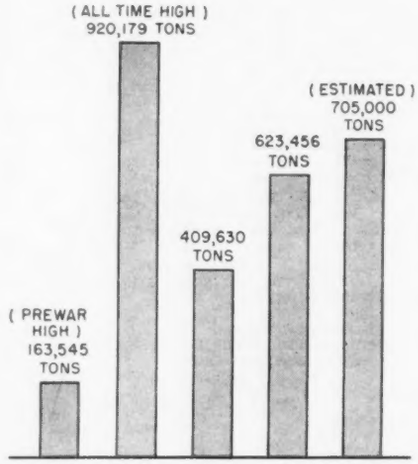
Aluminum for maintenance, repair and operation supplies is permitted at 100 per cent of the base period.

The order requires that inventories of aluminum may not exceed a 60-day supply, or a practicable minimum working inventory, whichever is less.

William H. Harrison, NPA administrator, revealed that steps are being taken to sharply increase this country's production of aluminum and to step up imports from Canada. There is "some prospect" of increasing production by 4000 to 5000 tons a month by reactivating idle plants at Massena, N. Y., and in North Carolina which were used during World War II. This increased output might begin to be added to current production by the second quarter of next year, he predicted.

Aluminum Output Rises

. . . present rate 705,000 tons



Tin—Order M-8 establishes rules for reporting on inventories, receipts, consumption, imports and distribution of tin. It also limits inventories of alloys and other materials containing tin, excluding ores and concentrates.

Any person who had 1000 pounds or more of pig tin in his possession or under his control on the first day of the month must file a report on form NPA-F7. The report must be filed on or before Nov. 20, for October; on or before the tenth day of each succeeding month with respect to all operations and transactions for preceding month. Importers must file form NPA-F8 on customs entry.

Zinc—The government's order on zinc provides that producers of zinc, zinc dust and zinc oxide don't have to use up more than 10 per cent of their output in filling DO orders during any one month. Zinc fabricators can reject a DO order if it would raise their shipments of specific products during any month to more than the following percentages of average monthly shipments in the first eight months of 1950: Zinc base alloys, 20 per cent; sheet, wire, rod, shapes, and plate, 15 per cent each. No zinc dealer has to accept priority orders which would raise his priority shipments of all zinc products to more than 15 per cent of supplies available to him during any month. The order provides a 30-day lead time for the filling of DO orders for both producers and fabricators.

Copper—Shipments of copper to manufacturing plants during October continued at a high rate, despite the shortage of the metal. Producers of copper delivered 121,806 tons last month to domestic industry against 119,529 tons in September, an increase of 2277 tons. It is estimated that, if copper shipped for government account were included, the overall total would aggregate about 140,500 tons against 139,000 tons on the same basis in September. Stocks of refined copper held by producers declined 1803 tons last month to 56,945 tons from 58,748 tons at the end of September.

The NPA order, covering copper, is expected to be issued momentarily. Provisions likely will be similar to those on aluminum, reducing use in civilian products about 35 per cent beginning Jan. 1.

Lead—Tonnages of lead available for shipment in December are much smaller than they were in either of the two preceding months. The steady tightening in supplies is reflected in the increase in premiums being paid for the metal on the Commodity Exchange. The supply situation likely will become more critical after Jan. 1 since the import duty on lead will be doubled on that date.

Remelt Aluminum Prices Up

New York—Secondary aluminum ingot producers advanced prices from about 1 cent to 2½ cents a pound last week. Prices now range from 31.00c to 32.00c for piston alloys, 30.50c to 31.00c for No. 12 foundry alloy (No. 2 grade), and 32.50c for Grade 1 steel deoxidizing alloy. The advance in prices is due to the shortage of scrap.

Mercury Prices Rise Sharply

New York — Mercury prices advanced sharply last week. Since most sellers have withdrawn offerings, current quotations are largely nominal. One large seller is offering five-flask lots to its customers at $110 a flask of 76 pounds. These small lots are to take care of users who consume only limited quantities of the metal. A comparable price for lots of 100 flasks or more would be from $107 to $108 a flask. These quotations represent advances of from $14 to $15 a flask.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingot: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 44.50c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.50c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 31.00-32.00c; No. 12 foundry alloy (No. 2 grade) 30.50-31.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.50-33.00c; grade 2, 30.75-31.50c; grade 3, 30.00-30.50c; grade 4, 29.50-30.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot, prompt, 132.00c; Dec. 130.50; Jan. 129.50c; Feb. 128.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 34.00c; English, 32.75c; Belgian, 32.75c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York, $107-$110, nominal, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.40 del.; special or patented shapes $2.65.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 80.00c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.93-41.68; yellow brass 36.86-38.28; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.57-51.91; phosphor-bronze grade A, 5%, 58.49-60.20.

Rods: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.26-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.83; 80%, 37.81-39.36.

Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.14-43.79; red brass, 85%, 41.45-43.05; 80%, 42.58.

Wire: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb lots 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots 29.35; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	52.0	....	....
0.156-0.188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 23.50-23.75c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 22.50-23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.00c; over 12-in., 23.50-24.00.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 77.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-62.00c; 25 to 99 lb. 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 36.59-38.34c; oval 36.09-37.84c; cast 37.37c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 55.6c, under 1000 lb 57.6c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,000 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 19.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c, 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 33.50c; 400-lb bbl. 31.50c up to 10,000 lb, 31.00c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel, silver, 10%..	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 26.00; No. 2 copper 25.00; light copper 24.00; composition red brass 22.00-22.75; radiators 17.75; heavy yellow brass 17.50-18.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 26.00*; No. 2 copper 25.00*; light copper 24.00*; refinery brass (60% copper) per dry copper content 21.00.

* Nominal

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 24.50-25.00; No. 2 22.50-23.00; light copper 21.00-21.50; No. 1 composition red brass 18.75-19.00; No. 1 composition turnings 18.25-18.50; mixed brass turnings 13.00-13.50; new brass clippings 18.50-19.00; No. 1 brass rod turnings 17.00-17.50; light brass 11.75-12.00; clean heavy yellow brass 15.00; new brass rod ends 17.50-18.00; auto radiators 15.25-15.50; cocks and faucets, 16.75-17.00; brass pipe 17.75-18.00.

Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 63.00-65.00; block tin pipe 90.00; No. 1 babbitt 58.00-60.00.

Aluminum: Clippings 2S 18.50; old sheets 14.00-15.00; crankcase 15.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Nov. 16	24.50	16.80	17.50	132.00	19.00	32.00	48.00	80.00
Nov. 15	24.50	16.80	17.50	136.00	19.00	32.00	48.00	80.00
Nov. 14	24.50	16.80	17.50	137.50	19.00	32.00	48.00	80.00
Nov. 13	24.50	16.80	17.50	138.00	19.00	32.00	48.00	80.00
Nov. 10	24.50	16.80	17.50	130.00	19.00	32.00	48.00	80.00
Nov. 9	24.50	16.80	17.50	138.00	19.00	32.00	48.00	80.00
Nov. 8	24.50	16.80	17.50	155.00	19.00	32.00	48.00	80.00
Nov. 7	24.50	16.80	17.50	152.00	19.00	32.00	48.00	80.00
Nov. 6	24.50	16.80	17.50	151.00	19.00	32.00	48.00	80.00
Nov. 3-4	24.50	16.80	17.50	136.00	19.00	32.00	48.00	80.00
Nov. 2	24.50	16.80	17.50	132.00	19.00	32.00	48.00	80.00
Nov. 1	24.50	16.80	17.50	127.50	19.00	32.00	48.00	80.00
Oct. Avg.	24.50	15.84	17.50	113.39	18.97	32.00	48.00	74.98

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Nov. 16, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Nov. 16	$41.67
Nov. 9	41.67
Oct. 1950	41.37
Nov. 1949	28.96
Nov. 1945	19.17

Based on No. 1 heavy melting grade, at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$44.00
No. 2 Heavy Melt.	41.00
No. 1 Busheling	44.00
No. 1 Bundles	*46.50*
No. 2 Bundles	39.00
Heavy Turnings	45.00-46.00
Machine Shop Turnings	36.00-36.50†
Mixed Borings, Turnings	36.00-36.50†
Short Shovel Turnings	38.00
Cast Iron Borings	36.00-37.00
Low Phos. Steel	53.50-54.00

Cast Iron Grades

No. 1 Cupola Cast	55.00-56.00
No. 1 Machinery Cast	59.00-60.00
Charging Box Cast	54.00-55.00
Heavy Breakable Cast	53.00-54.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	44.00
Rails, Random Lengths	63.50-64.00
Rails, 2 ft. and under	66.50-67.50‡
Rails, 18 in. and under	67.50-68.50‡
Railroad Specialties	*61.00-62.00*

† Crushers' buying prices.
‡ Nominal

CLEVELAND

(Delivered Consuming Plant)

No. 1 Heavy Melt. Steel	**$43.00-43.50**
No. 2 Heavy Melt. Steel	**39.00-39.50**
No. 1 Busheling	**42.50-43.00**
No. 1 Bundles	**42.50-43.00**
No. 2 Bundles	**31.00-31.50**
Machine Shop Turnings	**35.00-35.50**
Mixed Borings, Turnings	**36.50-37.00**
Short Shovel Turnings	**36.50-37.00**
Cast Iron Borings	**36.50-37.00**
Low Phos.	**46.00-46.50**

Cast Iron Grades

No. 1 Cupola	*64.00-65.00*
Charging Box Cast	*52.00-53.00*
Stove Plate	*54.00-55.00*
Heavy Breakable Cast	*54.00-55.00*
Unstripped Motor Blocks	*43.00-44.00*
Brake Shoes	*49.00-50.00*
Clean Auto Cast	*64.00-65.00*
Burnt Cast	*45.00-46.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	**44.00**
R.R. Malleable	*69.00-70.00*
Rails, 3 ft and under	*69.00-70.00*
Rails, 18 in. and under	*70.00-71.00*
Rails, Random Lengths	*64.00-65.00*
Cast Steel	*54.00-55.00*
Railroad Specialties	*57.00-58.00*
Uncut Tires	*59.00-60.00*
Angles, Splice Bars	*64.00-65.00*

VALLEY

No. 1 Heavy Melt. Steel	*$43.50-44.00†*
No. 2 Heavy Melt. Steel	*39.50-40.00†*
No. 1 Bundles	*43.50-44.00†*
Facty. Prod. Bundles	*43.50-44.00†*
No. 2 Bundles	**34.00-34.50**
Machine Shop Turnings	**35.00-35.50**
Short Shovel Turnings	**37.00-37.50**
Cast Iron Borings	**37.00-37.50**
Low Phos.	*46.00-46.50†*

† Plus applicable springboards

Railroad Scrap

No. 1 R.R. Heavy Melt.	**43.50-44.00**

PHILADELPHIA

No. 1 Heavy Melt. Steel	**$39.00-43.00**
No. 2 Heavy Melt. Steel	**36.00**
No. 1 Busheling	**38.00**
No. 1 Bundles	**39.00-43.00**
No. 2 Bundles	**32.00**
Short Shovel Turnings	**33.00**
Machine Shop Turnings	29.00-30.00
Mixed Borings, Turnings	26.00-27.00
Low Phos. Punchings and Plate, elec. fur. grade	49.00-50.00
Low Phos. Plate, 5 ft & Under	48.00-49.00
Elec. Furnace Bundles	46.00
Heavy Turnings	39.00
No. 1 Chemical Borings	40.00
Knuckles and couplers	*53.00-53.50*
Steel car wheels	*53.00-53.50*

Cast Iron Grades

No. 2 Cupola Cast	52.00
No. 1 Machinery Cast	55.00-56.00
No. 1 Yard Cast	49.00-50.00
Charging Box Cast	50.00-51.00
Heavy Breakable Cast	49.00-50.00
No. 1 Wheels	62.00
Malleable	65.00-67.00

CINCINNATI

No. 1 Heavy Melt. Steel	**$43.50**
No. 2 Heavy Melt. Steel	**40.50**
No. 1 Busheling	**43.50**
No. 1 Bundles	**43.50**
No. 1 Black Bundles	**40.50**
No. 3 Bundles	**30.00**
Machine Shop Turnings	**29.00**
Short Shovel Turnings	**31.00**
Mixed Borings, Turnings	**30.00**
Cast Iron Borings	**31.00**

Cast Iron Grades

No. 1 Cupola Cast	*65.00*
Charging Box Cast	*55.00*
Stove Plate	*50.00*
Heavy Breakable Cast	52.00
Unstripped Motor Blocks	40.00
Brake Shoes	34.00
Clean Auto Cast	*65.00*
Drop Broken Cast	*67.00*
Low Phos., 18 in. and under	56.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	44.00
R.R. Malleable	60.00
Rails, Rerolling	*63.00*
Rails, Random Lengths	*63.00*
Rails, 18 in. and under	70.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	*$32.50-36.00*
No. 1 Bundles	*37.50-42.00*
No. 2 Bundles	*31.00-32.50*
No. 1 Busheling	*37.50-42.00*
Machine Shop Turnings	29.00-29.50
Forge Flashings	*37.50-39.50*
Short Shovel Turnings	*31.50-34.50*
Cast Iron Borings	*34.00-35.00*
Punchings & Plate Scrap	*41.00-43.00*

Cast Iron Grades

No. 1 Cupola Cast	*58.00-60.00*
Heavy Breakable Cast	*45.00-50.00*
Clean Auto Cast	*60.00-64.00*

BUFFALO

No. 1 Heavy Melt. Steel	**$41.00-42.00**
No. 2 Heavy Melt. Steel	**38.00-38.50**
No. 1 Busheling	**38.00-38.50**
No. 1 Bundles	**39.50-40.00**
No. 2 Bundles	**36.00-36.50**
Machine Shop Turnings	31.50-32.50
Mixed Borings, Turnings	35.00-36.00
Cast Iron Borings	35.00-36.00
Short Shovelings	35.00-36.00
Low Phos.	*47.00-48.00*

Cast Iron Grades

No. 1 Cupola	*49.00-50.00*
No. 1 Machinery	*52.00-54.00*
Malleable	*58.00-60.00*

Railroad Scrap

Rails, 2 ft. and under.	60.00-61.00
Rails, random size	53.00-54.00
Railroad Specialties	53.00-53.50

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	**$34.50***
No. 2 Heavy Melt. Steel	**29.00-30.00**
No. 1 Busheling	**32.00-33.00**
No. 1 Bundles	**34.50***
No. 2 Bundles	**28.00-29.00**
Mixed Borings, Turnings	25.00-25.50
Machine Shop Turnings	25.00-25.50
Short Shovel Turnings	26.00-27.00
Punchings & Plate Scrap	*39.00-40.00*
Low Phos. Plate, 5 ft & under	*39.00-40.00*
Elec. Furnace Bundles	36.00-37.00

Cast Iron Grades

No. 1 Cupola Cast	43.00-44.00
No. 1 Machinery	45.00-46.00
Charging Box Cast	40.00-41.00
Heavy Breakable	40.00-41.00
Unstripped Motor Blocks	38.00-39.00

* Nominal

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$32.50-33.00
No. 2 Heavy Melt. Steel	29.00-29.50
No. 1 Bundles	32.50-33.00
No. 1 Busheling	*30.50-31.00*
Machine Shop Turnings	*25.00*
Short Shovel Turnings	26.00-26.50
Mixed Borings, Turnings	25.50-26.50
Bar Crops and Plate	40.00-42.00
Punchings & Plate Scrap	40.00-42.00
Chemical Borings	29.00-30.00

Cast Iron Grades

No. 1 Cupola Cast	41.00-42.00
Mixed Cast	39.00-40.00
Heavy Breakable Cast	38.50-39.50
Stove Plate	39.00-41.00

CHICAGO

No. 1 Heavy Melt. Steel	**$40.00**
No. 2 Heavy Melt. Steel	**38.00**
No. 1 Bundles	**40.00**
No. 2 Bundles	**35.00**
Machine Shop Turnings	**34.00**
Mixed Borings, Turnings	**34.00**
Short Shovel Turnings	**34.00-36.00***
Cast Iron Borings	*34.00-35.00*
Low Phos.	51.00-53.00
Elec. Furnace Bundles	42.00-43.00
Heavy Turnings	*38.00-39.00*
Cut Structurals	47.00-48.00

Cast Iron Grades

No. 1 Cupola Cast	58.00-60.00
Clean Auto Cast	58.00-60.00
No. 1 Wheels	54.00-55.00
Stove Plate	43.50-44.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00*
Malleable	66.00-67.00
Rails, Rerolling	64.00-65.00
Rails, Random Lengths	59.00-60.00
Rails, 2 ft. and under	64.00-66.00
Rails, 18 in. and under	66.00-67.00
Railroad Specialties	56.00-57.00
Angles, Splice Bars	59.00-60.00

* Brokers' buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	**$38.00-40.00**
No. 2 Heavy Melt. Steel	**34.00-35.00**
No. 1 Busheling	**36.00**
No. 2 Bundles	**35.50**
Machine Shop Turnings	**30.00**
Mixed Borings, Turnings	**28.00**
Short Shovel Turnings	**34.00**
Cast Iron Borings	**28.00**
Bar Crops and Plate	**44.00-45.00**
Cut Structurals	**44.00**

Cast Iron Grades

No. 1 Cupola Cast	**54.00**
Stove Plate	**47.00-48.00**
No. 1 Wheels	**nominal**

Railroad Scrap

No. 1 R.R. Heavy Melt.	**40.00-41.00**
R.R. Malleable	**nominal**
Rails, Rerolling	**58.00-59.00**
Rails, 2 ft and under	**59.00-60.00**
Angles and Splice Bars	**50.00**

ST. LOUIS

No. 1 Heavy Melt. Steel	*$42.00-44.00*
No. 2 Heavy Melt. Steel	36.50-37.50
No. 1 Bundles	*41.00-42.00*
No. 2 Bundles	36.00-37.00
Machine Shop Turnings	30.00-31.00
Short Shovel Turnings	32.00-33.00

Cast Iron Grades

No. 1 Cupola Cast	*58.00-60.00*
Charging Box Cast	*46.00-48.00*
Heavy Breakable Cast	*47.00-48.00*
Brake Shoes	*48.00-50.00*
Clean Auto Cast	*60.00-62.00*
Burnt Cast	*46.00-47.00*

Railroad Scrap

R.R. Malleable	*64.00-66.00*
Rails, Rerolling	60.00-61.00
Rails, Random Lengths	58.00-60.00
Rails, 2 ft and under	61.00-63.00
Uncut Tires	53.00-54.00
Angles, Splice Bars	60.00-62.00
Railroad Specialties	55.00-57.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	**$28.50**
No. 2 Heavy Melt. Steel	**24.50**
No. 1 Bundles	**26.50**
No. 2 Bundles	**22.50**
No. 3 Bundles	**19.50**
Machine Shop Turnings	**13.00**
Low phos, electric	**40.00**

Cast Iron Grades

No. 1 Cupola Cast	**45.00**

Railroad Scrap

No. 1 R.R. Heavy Melt.	**26.50**
Rails, Random Lengths	**26.50**

SEATTLE

No. 1 Heavy Melt. Steel	*$28.00*
No. 2 Heavy Melt. Steel	*28.00*
No. 1 Busheling	*25.50-26.00*
Nos. 1 & 2 Bundles	*25.50-26.00*
No. 3 Bundles	*22.00*
Machine Shop Turnings	*20.00*
Mixed Borings, Turnings	*20.00*
Punchings & Plate Scrap	*37.50-38.00*
Cut Structurals	*37.50-38.00*

Cast Iron Grades

No. 1 Cupola Cast	*35.00-42.00*
Heavy Breakable Cast	*35.00*
Stove Plate	*35.00*
Unstripped Motor Blocks	*33.00-35.00*
Malleable	*33.00-35.00*
Brake Shoes	*35.00*
Clean Auto Cast	*40.00*
No. 1 Wheels	*40.00*

Railroad Scrap

No. 1 R.R. Heavy Melt	*29.00*
Railroad Malleable	*35.00*
Rails, Random Lengths	*29.00-30.00*
Angles and Splice Bars	*29.00-30.00*

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	**$26.50**
No. 2 Heavy Melt. Steel	**24.50**
No. 1 Bundles	**26.50**
No. 2 Bundles	**22.50**
No. 3 Bundles	**17.50**
Machine Shop Turnings	**13.00**
Punchings & Plate Scrap	**40.00**

Cast Iron Grades

No. 1 Cupola Cast	**49.00**

Railroad Scrap

No. 1 R.R. Heavy Melt.	**nominal**
Rails, Rerolling	**39.50**

HAMILTON, ONT.

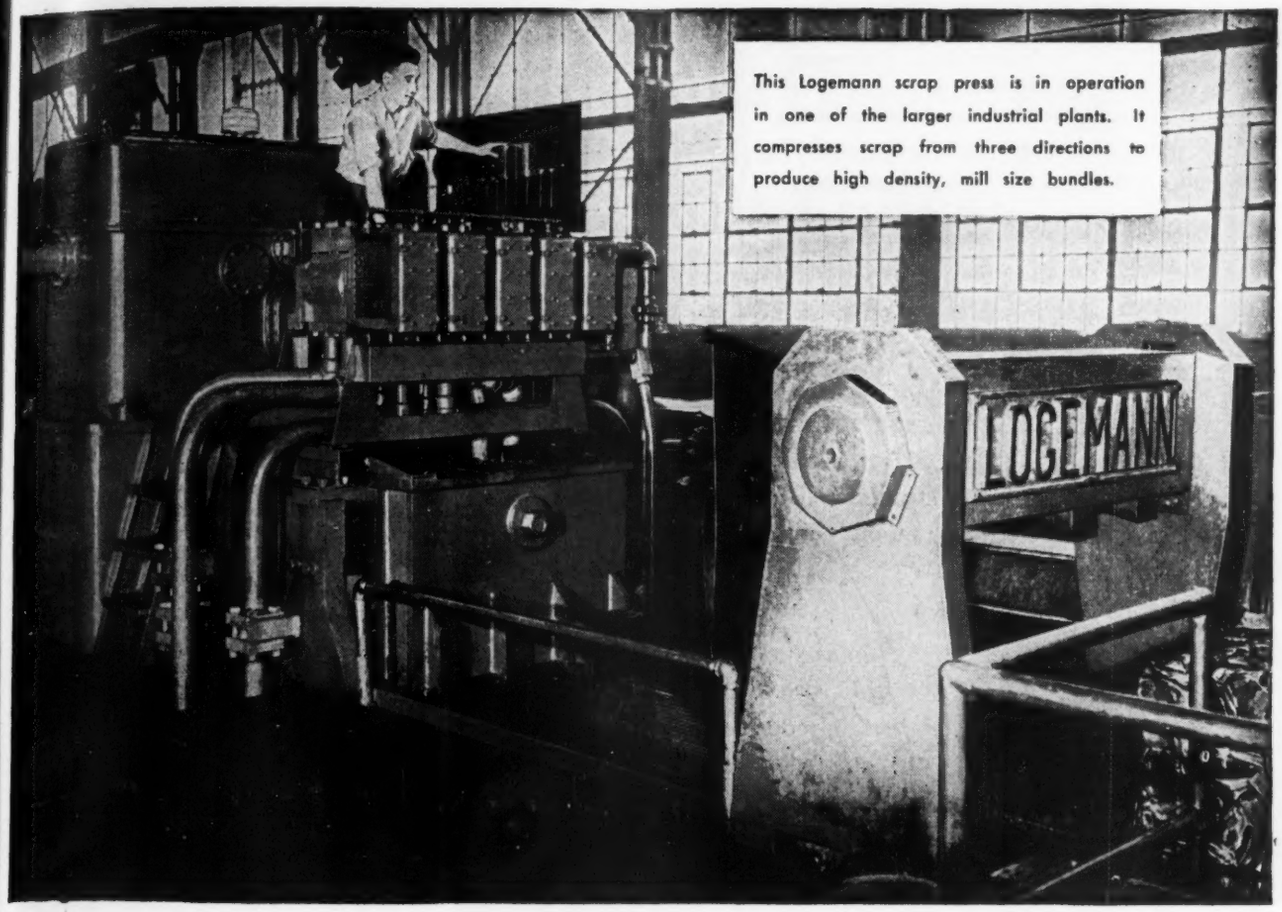
(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades*

No. 1 Machinery Cast.	45.00

* F.o.b. shipping point.



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Sheets, Strip . . .

Sheet and Strip Prices, Page 145 & 146

Philadelphia — Consumers of flat-rolled, unable to improve inventories this quarter, will be further stymied early in 1951 by smaller or no allocations for January. Carryovers that month will be heavier than estimated in most cases, and coupled with more rated orders including freight car building, as well as the likelihood of special programs covering distribution to other industries, such as warehouses, the volume of steel for general distribution is steadily narrowing. Scattered wildcat strikes also are causing production losses which can not be made up. One reason for larger carryover is rescheduling of considerable November-December volume for January. Some mills are already booked over the maximum percentage on rated products and confusion is growing around acceptance and scheduling of DO orders.

Pittsburgh — Upward adjustments in hot-rolled sheet extras were put into effect Nov. 11 by Jones & Laughlin Steel Corp. as follows: $3 per ton increase for regular sketches, $5 for irregular sketches, $8 per ton for exact quantities; $5 per ton in order quantity extra for less carload lots under 7000 pounds; item quantity extra brackets have been revised and increased $3 to $10 per ton; an additional charge of 15 per cent to the mill price and extras is now applicable for resquaring instead of 10 per cent previously; stretcher leveling up $5; pickling, $2; oiled, $3; corrugated, $3; greased edges, $4; limed, $3; back coiled, $2; box annealing and/or deoxidized, $4; spheroidized annealed, $6; normalizing extras have been deleted from the card, as well as heat treatment extras applicable for over 0.60 per cent carbon; specific and restricted test requirements extras advanced $2; packing extras increased from $1.50 to $12 per ton to reflect sharp increase in paper, lumber and other handling costs. Similar increase in extras applicable to cold-rolled sheets was made effective on same date. Mill length extras advanced $1 to $5 per ton; side cutting, up $1.

Boston — Demand for alloy cold rolled strip is heavy with the 430 series or straight chromium more widely substituted for nickel grades. First quarter capacity is filled on carbon grades, although limited tonnage has been scheduled beyond January. Additional rated orders are pushing back some civilian tonnage, and, while hot-rolled for the former is generally available, unrated schedules are subject to revisions due to fluctuating supply of steel for processing. Sheet allocations for January are sharply reduced.

Cleveland—Supply conditions continue to worsen in the flat-rolled steel market. Producers are accepting only DO and other rated orders for shipment beyond January, and for the latter month they are booked up solidly. Galvanized sheets are especially tight with production down sharply because of the scarcity of zinc.

Aside from the procurement prob-

lem, consumers are awaiting developments pricewise. Some observers anticipate an increase on flat-rolled averaging at least $10 per ton. Last week two Pittsburgh district producers effected sharp increases in extras on hot and cold-rolled sheets, but Republic Steel Corp., leading producer in this district, continued to hold its card unchanged.

Cincinnati—Sheet tonnage rolled in January will include a large proportion for nonmilitary use, but most of this will be carryover from fourth quarter. Schedule makers report there will be little free tonnage after allowing for this carryover, for directives, and for the steadily increasing DO volume. Because of uncertainties, schedules will be set up month-by-month instead of quarterly.

Chicago—Consumers of sheets and strip seem unable to comprehend that rolling schedules for January will accommodate no unrated tonnage, the capacity being fully taken up with defense and related orders and heavy carryovers. Clearer detailing of the quantities of steel required ahead of civilian demands is needed. Inland Steel Co. has cut back its production of galvanized sheets 25 per cent because of the zinc shortage.

Birmingham—Demand emphasis in this district continues on sheets. Mills say they have never been shorter. Each week indicates some additional DO orders. At least two prospective new industries are in the offing for this district.

Plates . . .

Plate Prices, Page 145

Boston—Plate allotments for January are reduced sharply with rated volume and railroad car building taking a larger share of light gage production. Mills are making way for 15 per cent DO volume and as high as 25 per cent for car shops, although the pattern is somewhat variable. Being estimated is a gas holder, Salem, Mass., although introduction of natural gas is expected to reduce the need for structures of this type in the future. For 18 oil storage tanks, New Haven, Conn., Chicago Bridge & Iron Co., Chicago, will require 3300 tons of plates.

Philadelphia—Heavier production of plates on strip mills for freight car building appears likely. Bulk of tonnage for that program is for 3/16 in. and one-quarter in., presenting a shearing problem for heavier mills. Where any new unrated tonnage is available for January, and there is not much, allotments are sharply reduced. Carryovers are heavy and with full impact of rated volume expected next quarter, some of this volume is endangered. Mills are establishing what tonnage is due warehouses under the order giving distributors preference based on first nine months shipments.

Birmingham—If there were enough plates to satisfy demands, the district would be producing not less than half again what it is turning out now. Plates will continue tight so long as priorities for freight cars must be taken care of first.

Seattle—Demand for plates continues strong in the face of a critical shortage of materials. Several im-

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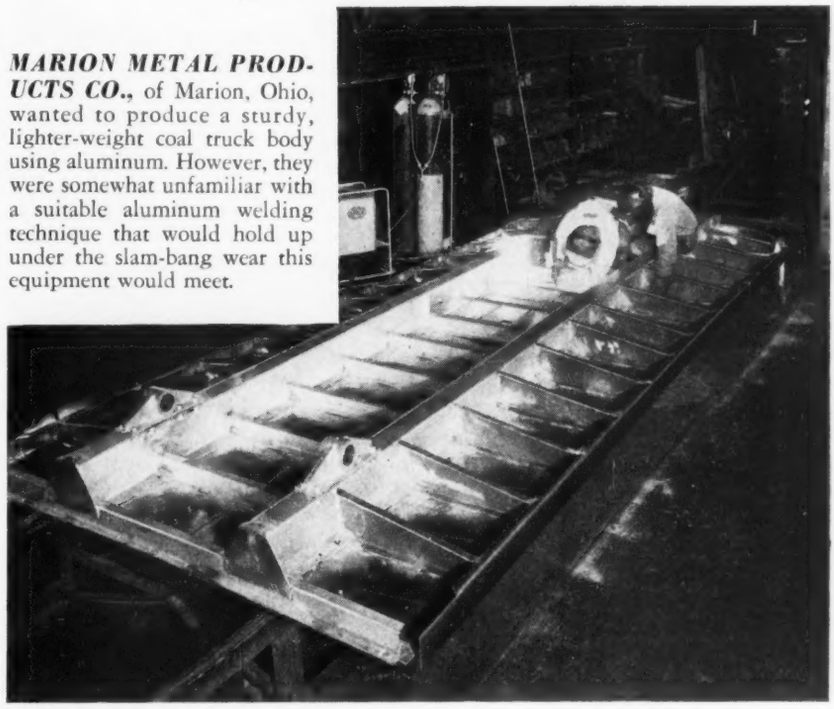

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portant plate jobs are up for early action.

Steel Bars . . .

Bar Prices, Page 145

Cleveland—Merchant bar supply conditions are expected to progressively worsen over coming months as pressure of military and other emergency demands mount. January rolling schedules will be taken up with rated tonnage and heavy carryover from fourth quarter. Indications are the February position of the mills will be little better, though carryover from the preceding month should be less heavy due to restricted booking by sellers. Cold-finished producers are hard pressed to obtain hot bars, but some of them are booked well into second quarter. Alloy bar needs are rising and producers anticipate increasing difficulty in obtaining nickel and other alloying metals.

Boston—Only electric furnace hot-rolled bars are available for first quarter with some mills with open hearth capacity filled. January schedules on carbon bars include heavy carryovers and little new tonnage has been booked. One Buffalo hot-rolled mill is going down for repairs having been in steady production for 11 years. Rated orders, scheduled in order of placement, are displacing civilian volume to a greater degree for first quarter.

Philadelphia—Some bar mills have no open capacity beyond rated orders for January and are booking no additional tonnage. Individual orders are frequently scheduled on several mills while substantial ratio of put-put on some units goes to special shapes. Old NE steel specifications are being increasingly substituted for alloy grades. Considerable rescheduling of cold finished tonnage throughout first quarter appears certain. Alloy production in nickel grades is notably effected by the shortage of that metal.

Los Angeles—Demand for cold-finished bars is stronger. Cold-drawers, sold through first quarter, are being pressed for delivery as distant as June.

Seattle—While there is a slight seasonal drop in demand for reinforcing bars, merchant bars are active. Local mills are operating at full capacity. Considerable work is up for early action, construction in Alaska calling for sizable tonnages.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 148

Cleveland—Bolt, nut and rivet manufacturers are under pressure for shipments from all directions. Railroad business is noticeably heavier with the big car program rapidly swinging into faster pace. In company with mounting DO and other rated orders, steel supply conditions of fastener makers are worsening.

Pittsburgh—Most fastener producers are confident they can extend certified tonnage orders received from railroad customers and other claimant agencies in the future. While this is not specifically spelled out in NPA orders to date it would appear logical that nut, bolt and rivet pro-

ducers will be given adequate steel tonnage to meet fastener requirements for direct and indirect military needs, plus a proportionate tonnage for civilian end use.

Semifinished Steel . . .

Semifinished Prices, Page 145

Chicago—Two production records were established at Gary Works, Carnegie-Illinois Steel Corp. in the week ended Nov. 11. Steel ingot output of 120,275 tons topped the previous mark of 119,386 tons for the week closing Apr. 8, this year. Primary mills in the plant turned out 98,826 tons of hot rolled products, topping the old record of 97,599 tons in week ended Apr. 29, 1950.

Structural Shapes . . .

Structural Shape Prices, Page 145

Philadelphia — Structural fabricating shops are desperately short of plain material, notably wide flange sections, and deliveries are lengthening. Some shops are now quoting 12 months delivery. Blanking out two months this quarter by one eastern producer has lowered shop inventories in many cases and is effecting operating schedules. More fabricators are selective in estimating and are not willing to make commitments too far ahead under existing conditions. Two contracts, 6800 tons, have been placed for the New Jersey turnpike.

Boston — Extended deliveries on fabricated structural steel are stimulating placement of some contracts, notably power plants and industrial structures. On the other hand, a few more speculative projects are temporarily postponed. Pressure for plain material from structural shops is heavy with inventories low. New bridge inquiry is maintained with several states advancing programs for estimates for earlier award of contracts.

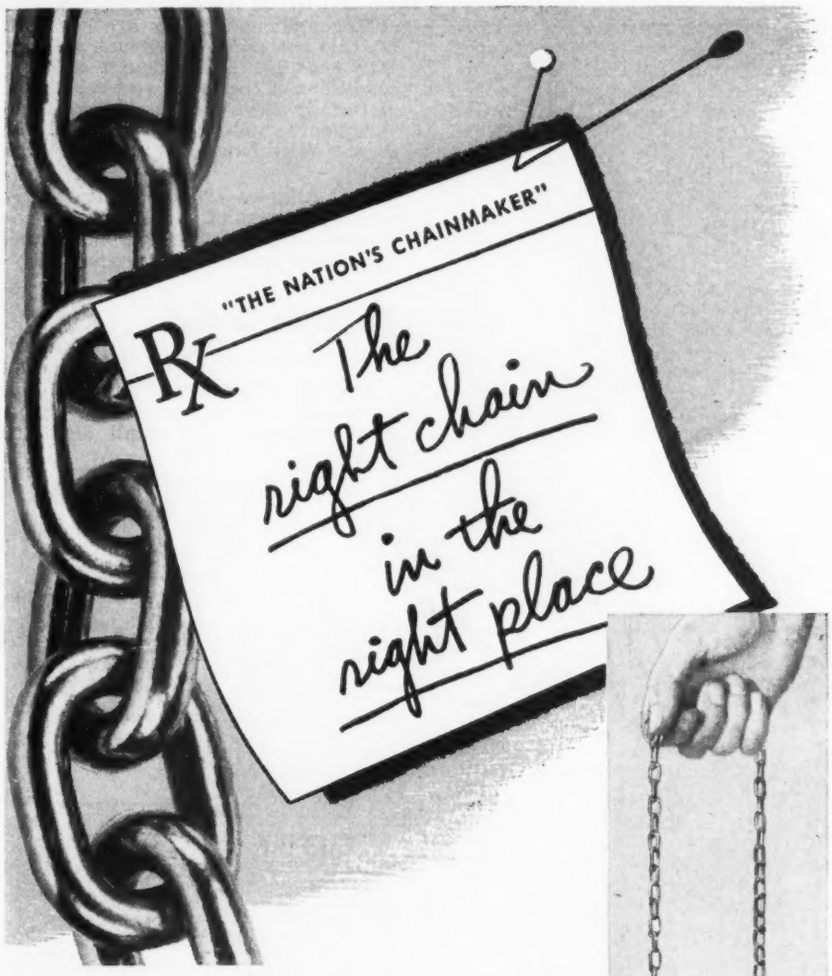
Los Angeles—Demand for structurals is increasing. Valuation of public works awards in southern California reversed a two-months decline in October and rebounded 24 per cent above the September level.

Seattle — Lack of war contracts makes it difficult for fabricating plants to overcome priorities and obtain sufficient steel for civilian jobs. It is impossible to place firm orders with mills for the first quarter. Several pending major projects involve sizable tonnages of structurals. Plant managers are nursing inventories in order to maintain current operations.

Wire . . .

Wire Prices, Page 147

Boston — Music wire has been placed on allocation by some mills for December and wire rope is about the only major product not on quota basis. Demand for heading wire is heavy with an increasing ratio of that grade rated, including screws for aircraft and other military equipment assemblies. Scheduling for January is geared to 45-days lead time and in some cases production programs for that month are still



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open. As a result some civilian volume for December can be shipped ahead of current DO placements. Specialties in some cases are booked beyond first quarter, but with rod supply becoming more uncertain.

Cleveland—Wiremakers are in receipt of heavier volume of DO and other emergency tonnage, and satisfying of this demand will be at the expense of regular customers. Full impact of the emergency requirements will not be felt until first quarter, however. Clarification of the allocation order covering railroad car needs is being sought in the interest of miscellaneous parts suppliers seeking drawn wire, wire rods and bars for manufacture of certain items entering into the completed cars.

Birmingham—Dealers are hard hit by the shortage of virtually every wire product. Even though weather conditions of the past two weeks have materially slowed down general construction, nails are particularly scarce. Wire fencing is in better supply.

Los Angeles—Wire demand continues in excess of supply. One wiremaker could sell twice as much tonnage as it currently is producing.

Tubular Goods . . .

Tubular Goods Prices, Page 148

Los Angeles—Oil drilling activity, at boom levels, is hard hit by shortages of casing and small diameter pipe. Lack of pipe caused one major driller to curtail drilling operations by 40 per cent. Oil well pipe suppliers pooled stocks of tubular goods to ease hardship cases.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 148

Pittsburgh—Oven coke supply is expected to be one of the most critical raw material problems to meet expanding blast furnace production over coming months. At least half of by-product coke ovens are over 20 years old and must be rebuilt to maintain satisfactory production volume. Expansion of coke producing facilities already scheduled for 1951 include rebuilding program involving 694 ovens with rated annual capacity of 5,075,000 net tons and two new batteries totaling 59 ovens rated at 460,000 tons annually.

Refractories . . .

Refractories Prices, Page 149

Pittsburgh—Coke oven rebuilding and new installation programs over coming months will tax output of silica brick to the limit and may require further expansion in the industry. No coke oven work is being held up by shortage of silica brick. Similarly the industry is fully meeting requirements for blast furnaces and open hearths. Deliveries on clay brick are available from stock; special shapes and silica grades are being promised within range of 6 to 12 weeks.

Pig Iron . . .

Pig Iron Prices, Page 144

Cleveland—Merchant iron suppliers anticipate further tightening in supplies with demand pressure giving no hint of easing off over coming months. Even though civilian goods requirements should slacken as result of credit and other restrictions, expectations are military and other emergency needs will take up any slack that develops. Production of iron is being pushed here to the limit of available furnace capacity. One stack in the area is down for extensive repairs, and expectations are it will not be back in production before mid-December. Pig iron prices are unchanged except for increases of $4.50 to $5 per ton on electric furnace silvery iron.

Boston — Foundry buying of foreign iron is heavier, several larger melting shops having placed tonnage at $55 to $58 dock. Purchase of imported iron by foundries is heaviest in some time with tonnage due to arrive about first of the year. District furnace is near capacity and shipping current melt. Outside domestic furnaces are shipping small tonnages to regular customers, but are not taking on new ones.

Pittsburgh—Shortage of foundry iron has resulted in part to fuller utilization of facilities among integrated steel producers for production of basic iron to meet unprecedented demand for hot metal growing out of steadily expanding steelmaking capacity which currently is operating in excess of 100 per cent. Some trade

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authorities contend this situation will be accentuated over coming months on basis of additional 10 million tons of ingot capacity scheduled for completion by end of 1952. During this period pig iron capacity will increase but 1.7 million. Indicative of the pressure for pig iron, only 2 out of 47 blast furnaces are idle in this district. This represents the highest rate of operations since 1948.

Pittsburgh Metallurgical Corp. advanced electric furnace silvery pig iron $5 per ton on Nov. 1 to $83, Niagara Falls, N. Y., on the base grade 14.01 to 14.50 per cent silicon.

Buffalo—Urgent demand for pig iron continues from leading consuming sources, but, so far, it is difficult to determine how much stock is moving into government work. Heating equipment and railroad casters are still absorbing large percentage of current output.

Cincinnati—The district melt is expanded to the limit of materials, pig iron being a bottleneck. Foundries on machine tool castings are busy.

Birmingham — Merchant melters report no let up in the insistent demand for pig iron. One producer says demand is greater than during World War II and shows no signs of abating. Large foundry expansions in the South and record cast iron pipe production are largely responsible.

Iron Ore . . .

Iron Ore Prices, Page 149

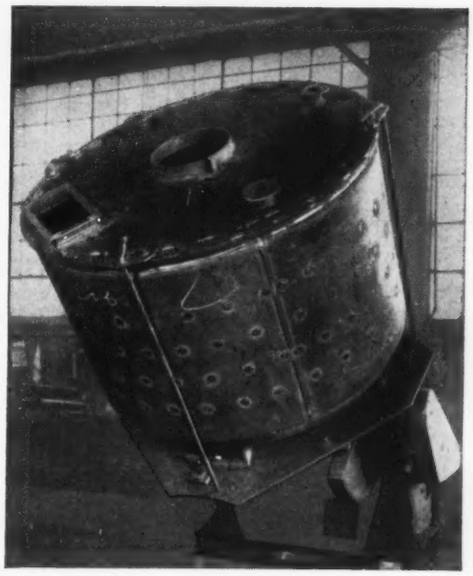
Cleveland — Inclement weather in the upper lakes region is beginning to hamper ore shipping. For the week ended Nov. 13, shipments of Lake Superior iron ore dropped below the 2 million ton mark for the first time since mid-May. Total shipments for the week came to 1,557,104 tons compared with 2,358,698 tons for the preceding week, bringing the season's cumulative total to 73,636,701 tons against 68,438,742 tons for the like 1949 period. The season increase in shipments from United States ports now totals 5,023,886 tons and will increase steadily over balance of the season since the steel strike a year ago curta.led shipments sharply.

Scrap . . .

Scrap Prices, Page 152

Pittsburgh—Formula prices on open hearth grades of scrap still prevail based on recent mill purchases of relatively small tonnages of dealer material. Electric furnace interests are still paying premium of $2.50 for No. 1 bundles. Cast scrap grades are commanding abnormally high prices due to acute pig iron shortage which is expected to prevail for an indefinite period. Railroad heavy melting continues to be allocated at the formula price but upward price trend continues to be noted for specialties to a range of $61 to $62.

Chicago — Mills continue to ward off the seemingly inevitable break through of formula prices, but the pressure grows. Meanwhile, upgrading of material becomes more pronounced as one means of circumvention. Most brokers decline to pay the premium prices demanded in dealer offerings and consumers are



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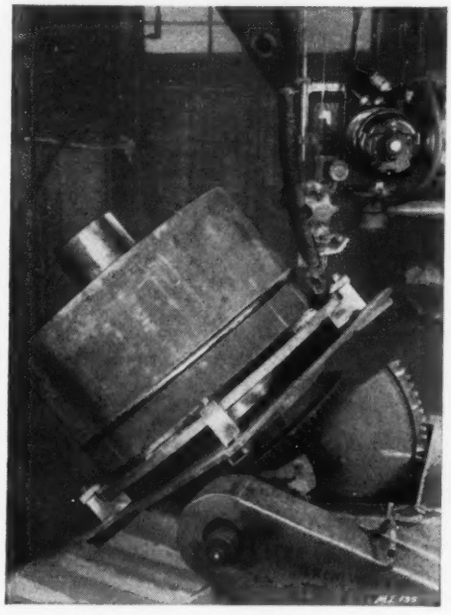

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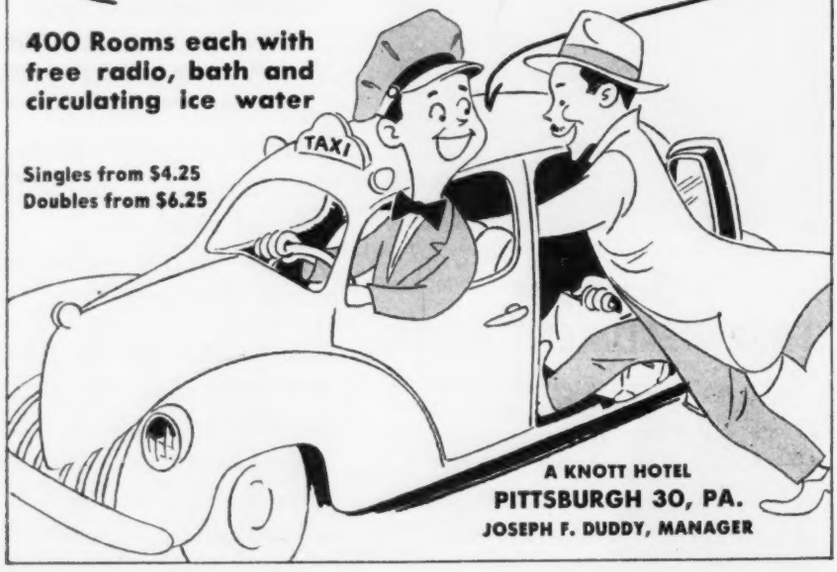

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forced to rely principally on earmarked industrial receipts. It appears, however, that the situation has not developed to the point where appreciable inventory is being lost. Cast iron borings are $1 stronger than a week ago and heavy turnings have advanced a like amount. Railroad offerings continue their firm price tone. Demand for foundry grades is substantially in excess of supply.

Boston—Although there are exceptions, formula prices generally hold for heavy melting steel scrap. No. 1 busheling and machine shop turnings are 50 cents per ton higher, but galvanized bundles are off a like amount. Demand for cast scrap is off slightly with prices firm and for the most part unchanged. This is attributed to some decline in buying for inventory.

New York — While some limited volume is being done in standard steel scrap grades above formula prices, bulk of tonnage is moving at those levels. Punchings and plate scrap, also low phos, are $2 per ton higher, brokers paying $39 to $40, shipping point. While strong, advances in cast grades are less feverish, with No. 1 cupola and No. 1 machinery unchanged.

Philadelphia — Knuckles, couplers and car wheels are $1 ton higher with most steel scrap grades holding to formula price levels. However, higher prices have been paid for heavy melting steel and formula levels are under pressure. Cast scrap is strong and active in view of tight pig iron supply with many melters increasing ratio of scrap in mixtures.

Buffalo—Strength ruled the scrap market last week. Prices on cast scrap advanced $2 to $2.50 a ton with business reported in cupola at $49-$50. Business also was reported in steelmaking grades at a shade outside of the formula range to a small consumer. Top mills, however, were still doing business within the voluntary price ranges.

Detroit—Prices of most grades of scrap are sharply higher, although the formula continues to govern on allocated material. Converters and foundries are siphoning off scrap at the higher prices. Dealers are reluctant to store much scrap and some see the possibility of a price reaction. Strength in cast grades is notable, with offerings of clean motor blocks several dollars higher than the representative quotations. Open-hearth mills are fairly well supplied, but electric furnace operators are trying to increase inventories.

Cincinnati — Open-hearth scrap grades are holding at the formula, while cast grades are higher. Stove plate increased $5 to $50 on exceptional demand. Dealers are moving their collections quickly; volume is good. Most melters are in comfortable position, as to stocks, but are taking in more tonnage as protection against winter needs.

St. Louis—Urgent foundry demand, aggravated by pig iron shortage, continues to boost cast scrap prices. Cast grades advanced $1 to $3. Shipments are tapering because of bad weather. The so-called formula is not being

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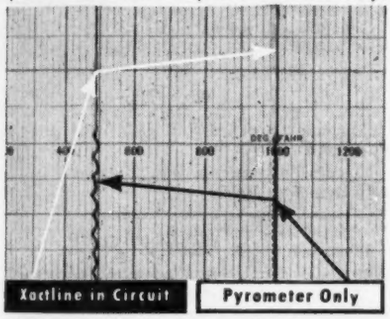

Exact reproduction of temperature chart for a heating process showing the comparison of the "Straight-Line" temperature control produced by XACTLINE and the saw-tooth curve obtained with only conventional control.

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XACTLINE is a complete unit. No adjustment or coordination with the control instrument is required regardless of the size of the furnace, length of the heating cycle, or size of the load. Installation is very simple — can be either flush or surface mounted.

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followed closely and mills are equalizing freight differentials. Upgrading is making it difficult for brokers to fill old orders at a profit.

Birmingham—Scrap prices are up again this week on strong demand. Cold weather has materially slowed down activity of scrap collectors. Cast grades and heavy melting stocks are short.

Los Angeles—Imports of scrap and pig iron keep the lid on prices. In face of vigorous foundry activity arrival of 18,000 tons of pig iron within two weeks keeps the damper on the price of foundry scrap. Recent arrival of 9000 tons of steelmaking scrap from Hawaii, coupled with scheduled arrival of 10,000 tons of No. 1 heavy melting from Germany, helps preserve price stability. Shipments were for Bethlehem Pacific Steel Corp.

Seattle—The larger scrap buyers have conceded their inability to hold the market at $24 for Nos. 1 and 2 heavy melting and are openly quoting $28. Other items have risen in the same ratio. Electric furnace scrap is $38 and No. 1 cupola cast ranges from $35 to $42. Foundries report cast iron scrap ample for current needs, but the market is firm. Mills' inventories are static. Bethlehem Pacific is still bringing scrap from Alaska and last week received a cargo of 10,000 tons of excellent material from Europe.

Warehouse . . .

Warehouses Prices, Page 149

Pittsburgh—Jones & Laughlin Steel Corp.'s warehouse steel outlets advanced hot-rolled sheet size, length and pickling extras $2 per ton, effective Nov. 13, to reflect upward adjustments in extras initiated at the mill level on Nov. 11. An advance of $1 per ton was put into effect on size and length extras applicable to cold-rolled sheets. Most other warehouse interests have not yet revised their extra schedules as indicated above, nor have they adopted the new width and gage extras on plates and revised flame cutting extras initiated by Jones & Laughlin warehouses on Oct. 17.

Distributors' inventories are at least 10 per cent below the level of this spring and a substantial reduction in mill shipments from the base period average is indicated throughout first quarter. There is growing prospect mills will have to set aside more than the percentage rated tonnage maximums recently established by NPA. One major producer estimates rated tonnage commitments for March delivery will represent between 30 and 35 per cent of total finished steel produced. In some products, such as sheet and plates, this percentage will exceed 40 per cent.

Cleveland—Local warehouse trade sees little prospect of substantially replenishing depleted inventories over coming months. Some relief may result from NPA order M-6 alloting mill tonnage to warehouses after DO and other rated orders are provided for, but the distributors are skeptical with military and other emergency

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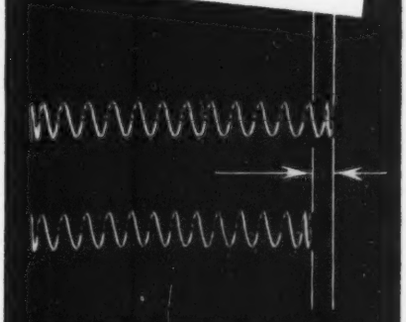

This actual photograph of two springs, taken after both springs had been subjected to the same tests, clearly indicates the superiority of ELGILOY as a spring material. Both springs were identical before testing! The ELGILOY spring (top) proved to have 5 times as much set resistance as the music wire spring!

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**Tests performed in the Rock Island Arsenal Laboratory, 20% salt spray at 95° F.*

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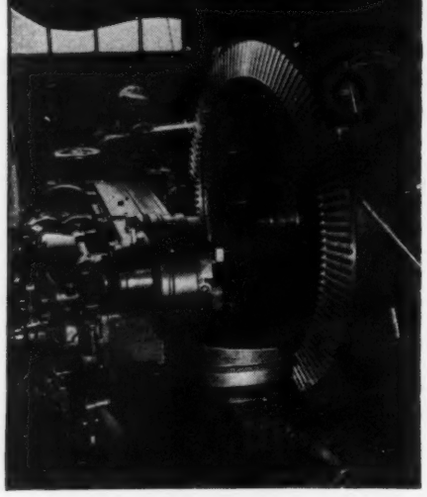

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demands threatening to take an increasing larger proportion of total production as the months pass.

Cincinnati—Warehouse stocks were never lower. Indicative of the pinch, one district fabricator bought tonnage direct from Belgian mills. Distributors foresee dwindling sales until the new allotment plan is in full swing. Despite pressure for steel, activity in the gray market is slight.

Los Angeles—Warehouse steel sales are steady at the October level. Inventories are down and badly broken in sheets, plates, bars, and structurals. Warehousemen say mill deliveries ranging from 12 to 15 weeks, coupled with rising demand, make balanced stocks impossible. Orders from aircraft plants, still in tooling-up stage, are light.

Seattle—The warehouse situation is "rugged" with stocks depleted, schedules upset by delayed deliveries and allocation restrictions hurting. Shipments, upon arrival, are rushed out to the job. Mills refuse to commit themselves on future business and distributors are doling available supplies to their trade. Hot and cold-rolled sheets, stainless items and plates are the most critical. Prices are unchanged, except on turned and polished cold-finished bars. Mills raised prices on this item and jobbers are passing on the increase of ½ cent.

Canada . . .

Toronto, Ont.—Production of iron and steel in Canada for the first nine months set new records. For September pig iron output was 199,415 net tons, daily average of 88.3 per cent of total rated capacity and comparing with 201,830 tons or 86.5 per cent for August and 168,436 tons or 74.6 per cent for September, 1949.

For the nine months ended Sept. 30, pig iron production totaled 1,697,451 net tons compared with 1,659,003 tons in the corresponding period of 1949.

Production of ferroalloys in September, 1950, was 17,765 net tons, against 19,018 tons in August and 12,250 tons in September, 1949. For the first nine months output totaled 132,355 net tons against 169,536 tons in 1949.

Production of steel ingots and castings in September, 1950, amounted to 274,947 net tons compared with 281,312 tons in August. For the nine months, cumulative production of steel ingots and castings totaled 2,509,473 net tons which compares with 2,404,368 tons in the like period of 1949 and with 2,361,387 tons in the 1948 period.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3800 tons, superstructure, Oak Island viaduct over Delancy street, Newark, N. J., to Bethlehem Steel Co.

3000 tons, superstructure, part of Oak Island viaduct, Newark, N. J., to American Bridge Co., Pittsburgh.

2650 tons, railroad and highway bridges, Beaver Falls, Pa., to American Bridge Co., Pittsburgh, through B. Perini & Sons Inc., Framingham, Mass., general contractor.

2350 tons, two Tishman Office Buildings, Los Angeles, to Bethlehem Steel Co.

1700 tons, grocery and warehouse, Safeway stores, Kearney, N. J., to Bethlehem Steel Co.

1400 tons, warehouse, Union Carbide & Carbon Co., New York, to American Bridge Co., Pittsburgh.

1150 tons, power plant addition, Virginia Power & Electric Co., Chesterfield, Va., to Bristol Steel & Iron Co., Bristol, Va.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

800 tons, boiler supports, Combustion Engineering Co., Goldsboro, N. C., to Bethlehem Steel Co.

770 tons, factory and office building, Raleigh, N. C., to Belmont Iron Works, Eddystone, Pa.

700 tons, power plant addition, Gulf States Utilities Co., Chaison, Tex., to Consolidated Western Steel Co., Beaumont, Tex.; Stone & Webster Engineering Corp., Boston, contractor-engineer.

575 tons, Washington state Skagit river bridge, to Virginia Bridge Co., Memphis, Tenn.; General Construction Co., Seattle, general contractor.

200 tons, warehouse and office building, Hill-Chase Co., Baltimore, to Bethlehem Steel Co.

150 tons, Alaska bridges, to Pacific Car & Foundry Co., Seattle; Munter Construction Co., Seattle, general contractor.

STRUCTURAL STEEL PENDING

2000 tons, two military warehouses, Fort Richardson, Alaska; Morrison-Knudsen Co., Seattle, and Peter Kiewit Sons Co., Longview, Wash., joint low bidders to U. S. Engineer, Seattle, $3,582,782.

1000 tons, Eielson field, Alaska, power plant; bids soon.

920 tons, bridge, Aroostook county, Maine; bids Dec. 6, Augusta, Me.

700 tons, boiler plant and incinerator, National Institute of Health, Bethesda, Md.

700 tons, scale plant, Fairbanks, Morse & Co., Kansas City, Mo.; Stone & Webster Engineering Corp., Boston, engineer-contractor.

500 tons, power transmission towers, Boston Edison Co., Boston.

500 tons, joint Idaho-Oregon Snake river bridge; general contract to J. H. Wise & Sons Inc., Boise, Idaho.

500 tons, approaches, Delaware river bridge, Trenton, N. J.; George M. Brewster & Sons, Bogota, N. J., low.

400 tons, bridge reconstruction, Pennsylvania Railroad, Wilmington, Del.

390 tons, state highway bridge, Luzerne county, Pennsylvania.

360 tons, state highway bridge, Indiana-Moreland counties, Pennsylvania.

325 tons, Chief Joseph dam, Columbia river; also unstated tonnage of steel piling; L. E. Dixon-Arundel Corp., Baltimore, low $25,967,921, 8.8 per cent above estimates.

300 tons, regional market building, Hartford, Conn.

300 tons, building, Teachers' College, New Britain, Conn.

250 tons, 163-foot, three-span continuous rolled beam bridge, Old King's highway (south), Darien, Conn.; bids Nov. 20, Hartford, Conn.

200 tons plus, takeoff structures, transformer towers and switchyard structures, Hungry Horse dam, Montana; bids to Denver late November.

160 tons, hospital, Phoenixville, Pa.; bids in.

100 tons plus, including reinforcing bars and steel piling, Bureau of Public Roads, Alaska bridge; bids to Juneau, Nov. 29.

Unstated, sluice gates, hoists, frames etc., Chief Joseph dam; bids to U. S. Engineer, Seattle, Dec. 7.

Unstated, several Bailey bridges, also concrete abutments; bids to Bureau of Reclamation, Ephrata, Wash., Nov. 28.

Unstated, 55 x 142-foot steel warehouse, Eklutna, Alaska; bids to Bureau of Reclamation, Denver, Nov. 20.

Unstated, takeoff structures, etc., Gorge

powerhouse, Skagit project; bids to Seattle, Nov. 16.

Unstated, bridge and approaches, Portage, Alaska, also cofferdam materials, some items furnished by government; bids to Alaska Railroad, Anchorage, Dec. 12.

REINFONRCING BARS . . .

REINFORCING BARS PLACED

500 tons, St. Michael's Hospital, Grand Forks, N. Dak., to United States Steel Supply Co., Chicago.

280 tons, building, Chain Belt Co., Milwaukee, to W. H. Pipkorn Co., Milwaukee.

125 tons, Lumberman's Mutual Insurance Co., Canton, O., to United States Steel Supply Co., Chicago.

60 tons, Washington state Skagit river bridge, to Bethlehem Pacific Coast Steel Corp., Seattle; General Construction Co., Seattle, general contractor.

REINFORCING BARS PENDING

2300 tons, Chief Joseph dam, Columbia river; bids in to U. S. Engineer, Seattle.

1500 tons, No. 48, New Jersey Turnpike Authority, Essex and Hudson counties; bids Dec. 5. Also required are 1750 feet of galvanized wrought iron troughs.

1300 tons, substructure, overpass, Oak Island yards, Newark, N. J.; Underpinning and Foundation Co., New York, general contractor. Project also takes 4050 tons of steel bearing piles.

900 tons, No. 45, New Jersey turnpike Authority, Newark, N. J.; bids Nov. 28. Also required are 4300 feet of metal railings. 6700 tons of structural steel included in this inquiry when originally advertised on Oct. 6 have been deleted.

600 tons, Tacoma treatment plant; Walsh Construction Co., San Francisco low, $1,555,085.

500 tons, expansion, Sunbeam Corp., Cicero, Ill.

290 tons, Alaska military warehouses; bids in to U. S. Engineer, Seattle.

250 tons, Public Service Co., Terre Haute, Ind.

200 tons, Public Service Co., Columbus, Ind.

175 tons, warehouse, Central Steel & Wire Co., Chicago.

140 tons, expansion, Illinois Bell Telephone Co., Bellwood, Ill.

110 tons, Trinity Luthern church, St. Joseph, Mich.

Unstated, 17-mile canal extension, Columbia Basin project; bids soon to Bureau of Reclamation, Denver.

PLATES . . .

PLATES PLACED

3300 tons, 18 tanks, Esso Standard Oil Co. of New Jersey, New Haven, Conn., to Chicago Bridge & Iron Co., Chicago.

1000 tons, tanks, Texas Co., New York, to Bethlehem Steel Co.

240 tons, tanks, American Co., Tampa, Fla., to Chicago Bridge & Iron Co., Chicago.

175 tons, tanks, Gulf Oil Corp., Philadelphia, to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

2000 tons, penstock liners, Ross power plant; bids to Seattle, Nov. 29.

Unstated, Chief Joseph dam cofferdam; bids in at Seattle.

Unstated, silos, tanks, etc., addition to Crown-Zellerbach wood mill, Camas, Wash.; L. H. Hoffman, Portland, Oreg., general contractor.

Unstated, 1.77-mile, 14-foot diameter tunnel, Columbia Basin project; bids to Bureau of Reclamation, Ephrata, Wash., Dec. 7.

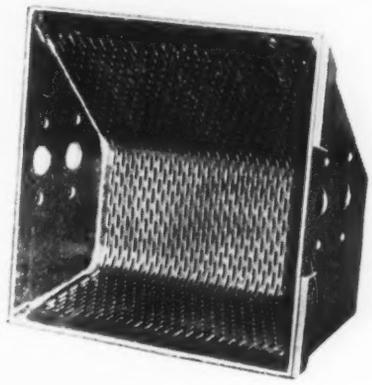
PIPE . . .

STEEL PIPE PENDING

Unstated, 3500 feet 12, 10 and 8 inch suction and blowoff pipe, spillway project; no bids submitted to Tacoma, Wash.

Unstated, pipe, fittings and miscellaneous, Hungry Horse dam project; bids to Bureau

Typical of Hendrick's **Manufacturing Facilities**



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of Reclamation, Columbia Falls, Mont., Nov. 27.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Chicago, Rock Island & Pacific, eight 3-unit 4500-hp diesel-electric freight locomotives and six 2250-hp passenger units, to the Electro-Motive Division, General Motors Corp., La Grange, Ill.

Louisville & Nashville, twenty-two 1500-hp general purpose and four 2250-hp diesel-electric locomotive units to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Minneapolis, St. Paul & Sault Ste. Marie, 20 diesel-electric units; two 2-unit 3000-hp passenger locomotives, three 2-unit 3000-hp freight locomotives and two 1500-hp road switching units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.; two 1500-hp road switching units to Baldwin Locomotive Works, Eddystone, Pa.; one 1500-hp switching unit and five 1000-hp switching units, to American Locomotive-General Electric Companies, Schenectady, N. Y.

Spokane, Portland & Seattle, four 1600-hp diesel-electric locomotive road switching units, to American Locomotive-General Electric Companies, Schenectady, N. Y.

RAILROAD CARS PLACED

American Refrigerator Transit Co., 500 refrigerator cars, to its own shops in St. Louis.

Canadian Pacific, 4575 freight cars, with Canadian Car & Foundry Co., Montreal, being awarded 1900 fifty-ton box, 350 automobile box and 100 flat cars; National Steel Car Corp., Hamilton, Ont., 800 fifty-ton box, 350 refrigerator and 50 covered hopper cars; Eastern Car Co., Trenton, N. S., 500 fifty-ton box, 300 drop-end gondola and 225 hopper cars.

Chicago, Burlington & Quincy, 1000 box, 400 flat, 250 gondola and 200 hopper cars, to its own shops at Havlock, Nebr.

Chicago & Great Western, 1050 freight cars, 600 box and 300 gondola cars going to Pullman-Standard Car Mfg. Co., Chicago; and 150 flat cars to American Car & Foundry Co., New York.

Fort Worth & Denver City, 250 box cars to the Havlock, Nebr., shops of the Chicago, Burlington & Quincy.

Minneapolis & St. Louis, 700 fifty-ton box and 100 fifty-ton flat cars, to the General American Transportation Corp., Chicago.

Spokane, Portland & Seattle, 200 fifty-ton flat cars, to Pacific Car & Foundry Co., Seattle; also 2 sleeping cars and 1 passenger coach, to Pullman-Standard Car Mfg. Co., Chicago.

Western Pacific, 600 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago.

FERROALLOYS

(*Continued from page* 149)

Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 33.35c per lb of contained Cr, 0.04% C 31.25c, 0.06% C 30.25c, 0.10% C 29.75c, 0.15% C 29.50c, 0.20% C 29.25c, 0.50% C 29.0c, 1% C 28.75c, 1.50% C 28.60c, 2% C 28.5c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 MxD, bulk, 23.25c per lb of contained Cr, c.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, Carload, packed, 8 MxD, 16.10c per lb of alloy; 1 ton 16.95c; less ton lot, 18.15c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.00c per **pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.**

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.0c per lb of con**tained silicon plus aluminum, 2" x down, delivered.**

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium, ton lot $1.10, less ton $1.12. Delivered. Spot **add 5c.**

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.75 per lb of contained W; 2000 lb W to 10,000 lb W, $2.85; less than 2000 lb W, $2.97. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $3.65 per lb of contained W; less than 1000 lb W, $3.75.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 19.00c per lb of contained Si; packed 20.40c; ton lot 21.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.0c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered, Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered, Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 15.55c per lb of contained Si, carload packed 16.8c ton lot 17.8c, less ton 18.95c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered, Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 90-95% ferosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3⅛ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.85c, per lb of briquet, c.l. packaged 11.65c, ton lot 12.45c, less ton 13.35c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.75c per lb of briquet, c.l. packed 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—weighing approx 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c, c.l. packed 7.7c, ton lot 8.5c, less ton 9.40c. Delivered. Add 0.25c for notching. small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.04 per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 21.0c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.).

Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.25, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.00 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3.10. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.20.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

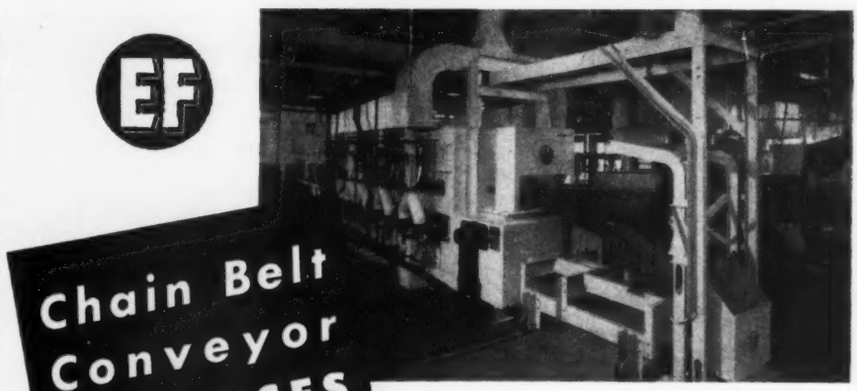
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.22; Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.04, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.



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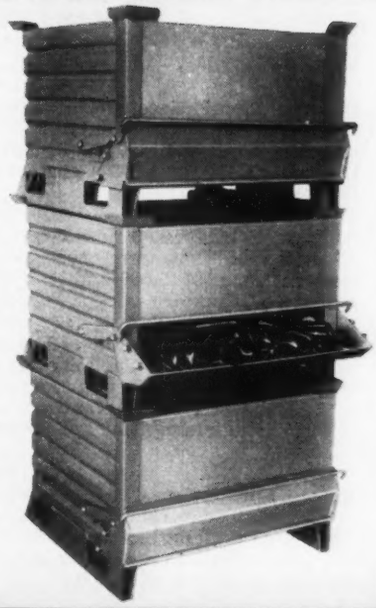

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

California

North American Aviation Inc., Inglewood, Calif., started a $1 million expansion of its plant facilities. Under construction is a 75,000 square foot warehouse addition, a 33,600 square foot office mezzanine, a 108,000 square foot building to house extrusion forming, sheet stretch forming, and processing work, and a 12,800 square foot drop hammer building. General contractor is Vinnell Co. Inc., Alhambra, Calif. Completion is scheduled by May 1.

California

A-B-A Unit Mfg. Co., Los Angeles, was established to manufacture a hydrotherapy device known as the A-B-A Unit. The device is intended for use in hospitals.

California

Canners Co-operative Steam Co., Long Beach, Calif., will build a $1 million central steam plant in that city. Construction is scheduled to start by April.

Delaware

Putnam Machinery Corp., laboratory for designing, was chartered by the secretary of state's office, Dover Del. Capital of the firm is listed at $10,000. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Central-Phoenix Steel Corp., furnaces, has filed a charter of incorporation with the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Coinmach Industries Corp. of Virginia, machinery, was chartered by the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is the principal office.

Illinois

Funk Bros. Seed Co., Bloomington, Ill., awarded the general contract for a soybean processing mill to John Felmley Co., that city, for about $750,000. R. W. Booker Associates, St. Louis, prepared the plans.

Illinois

Chicago Metal Hose Corp. awarded the general contract for a $100,000 addition to its Elgin, Ill., plant to the Illinois Hydraulic & Construction Co., that city.

Illinois

Korhumel - Heffron - Priess Steel Co., Evanston, Ill., awarded the general contract for a $145,000 addition to its plant to Kinnaire Corp., Chicago.

Illinois

Fearn Laboratories Inc., Franklin Park, Ill., awarded the general contract for a $210,000 plant addition to L. A. Marconi Co., Chicago. Joseph W. Bagnuolo, Chicago, prepared the plans.

Illinois

Tuthill Spring Co., Chicago, awarded the general contract for a factory and office building to Grady & Wagner Construction Co., Hammond, Ind. Estimated cost is $125,000.

Illinois

Keystone Steel & Wire Co., Peoria, Ill., is offering for immediate showing its film, "The Shadow of a Pioneer," depicting progress of its employees under the American system of free enterprise. The film includes spectacular scenes of the steel and wire making process through open-hearth furnaces, rolling mills, wire drawing and fabricating to produce wire fences, etc.

Indiana

Servel Inc., Evansville, Ind. — gas equipment and appliances—appointed Behler-Young Co., Grand Rapids, Mich., and Demmler Bros. Co., Pittsburgh, as distributors of its air conditioners.

Maryland

Bendix Radio Division, Bendix Aviation Corp., East Joppa Rd., Towson, Md., has begun an expansion program which will increase its present floor space of 500,000 square feet by about 50 per cent.

Maryland

Sheet Metal Coating & Lithographing Co., Baltimore, acquired a building, formerly a foundry unit of the Standard Gas Equipment Corp., on Wicomico street. The building will be equipped throughout with machinery. The company will continue operation of its present plant, which is smaller than its new acquisition.

Maryland

Steel Specialties Inc., Baltimore, distributor of steel products, secured bids for construction of a one-story building at 4810 East Monument St., that city. The structure will be much larger than its present plant.

Maryland

Baltimore Pump & Engine Works, 630 East Ford Ave., Baltimore, plans to move to 1258 Henry St., that city, retaining its present quarters for storage.

Maryland

Struman Mechanical Laboratory, general machine shop work, moved into larger quarters at 2023 Ashland Ave., Baltimore.

Maryland

F. H. Sparks Co. Inc. is opening a plant at 1912 East Preston St., Baltimore. The company fabricates building steel. New plant will include a welding shop. Harry S. Bird Jr. is local manager. Headquarters of the company are at 222 East 41st St., New York.

Michigan

Worthington Pump & Machinery Corp., Harrison, N. J., appointed Friel-Detroit Co., Detroit, to sell and service its air compressors for all types of service stations, bulk plants and garages.

Michigan

Waterson's, manufacturer and distributor of industrial tools and machinery, moved into its new building at 960 W. Eight Mile Rd., Detroit.

Michigan

Detroit Electric Furnace Division, Kuhlman Electric Co., Bay City, Mich., appointed two agents, Eastern Foundries Supplies Inc. and Interstate Supply & Equipment Co. Eastern Foundries has offices in Newark, N. J. and a factory in Irvington, N. J. Interstate has offices in Milwaukee.

New York

Sterling Engine Co., Buffalo, had its

STANDARD RUST PROOFING PRACTICE THE WORLD AROUND

CHEMICALS ACP PROCESSES

SPECIFICATION CHEMICALS FOR THE GOVERNMENT AND ITS CONTRACTORS

Phosphatizing, Rust Proofing and Paint Bonding Chemicals

SPECIFICATION NUMBER	ACP SPECIFICATION CHEMICAL
QQ-P-416	"Lithoform"
	"Zinodine"
RR-C-82	"Lithoform" No. 32
MIL-C-5541 (See also QPL-5541-1)	"Alodine"
MIL-S-5002	"Alodine"
	"Granodine" (Dip, Spray and Brush grades)
JAN-C-490, Grade I	"Granodine" (Dip, Spray and Brush grades)
JAN-F-495	"Granodine" (Dip, Spray and Brush grades)
	"Lithoform"
JAN-L-548	"Permadine"
AN-E-19	"Alodine"
	"Zinodine"
AN-F-20	"Alodine"
	"Granodine" (Dip, Spray and Brush grades)
	"Lithoform"
	"Permadine"
	"Thermoil-Granodine"
	"Zinodine"
	(See also U.S.A. 3-213)
U.S.A. 57-0-2	
Type II, Class A	"Thermoil-Granodine"
Type II, Class B	"Permadine"
Type II, Class C	"Granodine" (Dip, Spray and Brush grades)
U.S.A. 51-70-1	
Finish 22.02, Class A	"Thermoil-Granodine"
Finish 22.02, Class B	"Permadine"
Finish 22.02, Class C	"Granodine" (Dip, Spray and Brush grades)
U.S.A. 50-60-1	"Granodine" (Dip, Spray and Brush grades)
U.S. Navord O.S.675	"Alodine"
U.S.N. Appendix 6	"Lithoform"
Navy Aeronautical M-364	"Permadine"
	"Thermoil-Granodine"
AN-C-170	(See MIL-C-5541)
U.S.A. 72-53	(See AN-F-20)
AXS-1245	(See JAN-C-490)

Rust Removing and Metal Conditioning Chemicals

SPECIFICATION NUMBER	ACP SPECIFICATION CHEMICAL
JAN-C-490, Grade II	
Type 4	"Deoxidine" Nos. 126, 512, 526, 624, 670
Type 5	"Deoxidine" Nos. 170, 171, 670
U.S.A. 3-213	
Type I	"Deoxidine" (Wash-off grades)
Type II	"Deoxidine" (Wipe-off grades)

Metal Cleaning Chemicals

SPECIFICATION NUMBER	ACP SPECIFICATION CHEMICAL
JAN-C-490, Grade II	
Type 2	"Ridoline"
Type 6	"Ridosol"
U.S.A. 3-192	"Ridoline" No. 3192
U.S.N. Appendix 6	"Deoxidine"

Acid Inhibitors, Pickling

SPECIFICATION NUMBER	ACP SPECIFICATION CHEMICAL
U.S.N. 51-1-2	"Rodine"

Write us for descriptive folders and further information on the specification chemicals listed above. Additional copies of this chart are available on request.

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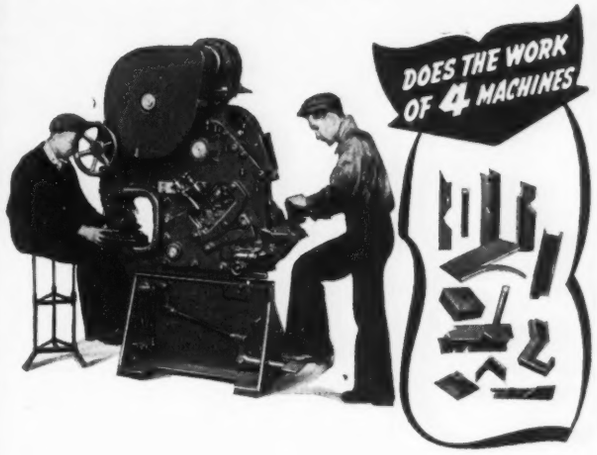

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reorganization plan confirmed by the federal court. Receiver Manly Fleischmann reported the company in good financial shape with assets of approximately $3 million. The plan, as approved, provides unsecured creditors with claims will receive 20 per cent in cash and 80 per cent in prior preferred stock.

New York

Porter-Cable Machine Co., Syracuse, N. Y., purchased the Johnson Engineering & Sales Corp., Rockford, Ill., and will transfer the production facilities of the concern to Syracuse.

New York

Radio Receptor Co. Inc.—radio and electronic components and complete assemblies—purchased a factory at Wythe avenue and N. Third street, Brooklyn, N. Y.

New York

Globe - Union Inc., Milwaukee, purchased a factory at Hastings-on-Hudson, N. Y. The plant will be used for manufacture of batteries.

New York

Capitol Corp. moved into larger quarters at 829 E. 144th St., Bronx, N. Y.

New York

Westcott Chuck Co., Oneida, N. Y., appointed John T. Everett & Co., Memphis, Tenn., as district representative of the company in Alabama, Arkansas, Oklahoma, Louisiana, Mississippi, and Texas.

Ohio

Lisbon Machine Shop Co. was incorporated in Lisbon, O., to enter the machinery and equipment business at the manufacturing level. The company also manufactures other steel and metal products. The incorporators are John Marshalek, statutory agent, Michael Lisohir and Orrie E. Dotson.

Ohio

Thompson Tool Corp. was organized in Columbus, O., by Bradley Schaefer, Gordon H. Savage and Philip C. Ebeling to engage in the manufacture of tools, dies and jigs. William O. Thompson, 345 Kenbrook Dr., Worthington, O., is the sponsor and will act as corporate agent.

Ohio

Electric Products Co., Cleveland, appointed Power Equipment Co., Kansas City, Mo., as its representative in the western counties of Iowa and Missouri, the panhandle counties of Texas and the states of Arkansas, Oklahoma and Kansas. Products handled include motors, generators, battery chargers, electrolytic power supplies and frequency changers.

Pennsylvania

Doittau Products Foundries, Corbeil, France, has been licensed by **Pittsburgh Metals Purifying Co.,** Pittsburgh, on a royalty basis to produce thermotomic compounds and exothermic head compounds developed by Peter Soffel, president of the Pittsburgh concern. The licensing agreement includes formulas covering company's fluxes for all metals and alloys.

Pennsylvania

National Welding Supply Association moved its offices to 1900 Arch St., Philadelphia 3.

Washington

Washington Steel Products Co., Tacoma, Wash., plans doubling its plant at 1940 E. 11th St., that city. John Marontate is president.

Washington

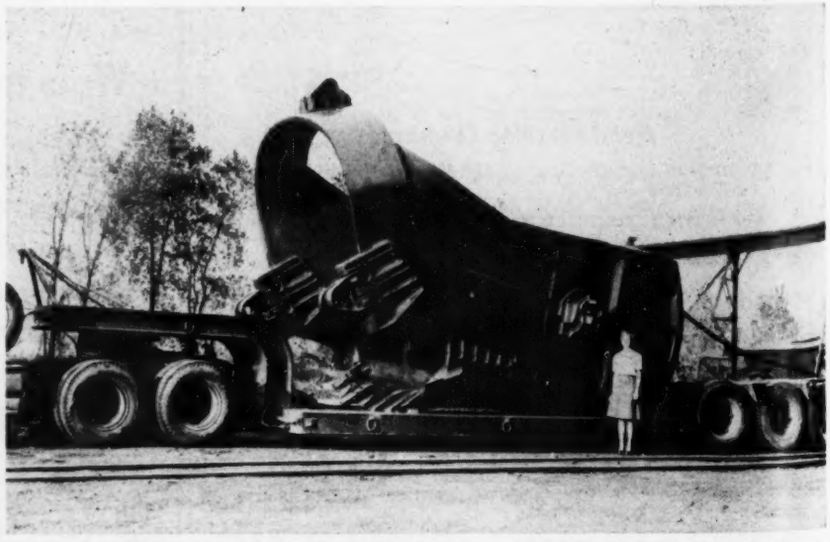
Crown-Zellerbach Corp., San Francisco, awarded a contract to L. H. Hoffman Co., Portland, Oreg., for a $400,000 addition to its wood mill at Camas, Wash. The same contractor is building a bleach and filter plant for the company at West Linn, Oreg.

Wisconsin

Construction of **Ladish Co.'s** $100,000 storage and processing building in Cudahy, Wis., is proceeding rapidly. Ladish makes a wide variety of forgings. In 1947 the firm purchased for $2 million a War Assets Administration plant in Cudahy which it had operated during World War II.

Wisconsin

Lucas - Milhaupt Engineering Co., Cudahy, Wis., will be ready to double its output of silver brazing and soldering preforms when its expansion program is completed by the end of the year.



QUITE A DRAG: One of the largest all-welded, automatic drag line buckets in the country, this 25-cubic yard bucket is made of high-strength rolled steel and Hadfield castings. The bucket was manufactured by Page Engineering Co., McCook, Ill., with electric arc-welding equipment. Here it is ready for shipment